NORTH LAKE COLLEGE

1979-80 Catalog
a member of the Dallas County Community College District

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Volume III
North Lake College Catalog 1979-1980

North Lake College

Candidate Status in the Southern Association of Colleges and Schools (SACS)
Member of the American Association of Community and Junior Colleges
Member of Texas Public Community/Junior College Association
Member of the Association of Texas Colleges and Universities
Member of the League for Innovation in the Community College
An Affirmative Action Equal Opportunity Institution

The Dallas County Community College District

A Community College District recognized and sanctioned by The Coordinating Board, Texas College and University System

The information in this catalog is based upon present conditions and is subject to change without notice. The College reserves the right to modify or amend any statement or policy to reflect current Board policies, administrative regulations or procedures and applicable State or Federal laws or regulations.

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CALENDAR

FALL SEMESTER, 1979

August 20 (M)	Faculty Reports
August 21-23 (T-R)	Registration
August 24 (F)	Faculty Professional Development
August 25 (S)	Saturday classes begin
August 27 (M)	Classes begin
August 31 (F)	Last day for tuition refund
September 3 (M)	Labor Day Holiday
September 8 (S)	12th class day (Includes Saturdays)
November 22-25 (R-S)	Thanksgiving Day Holidays
November 26 (M)	Classes resume
December 7 (F)	Last day to withdraw "W"
December 13 (R)	Last day of classes (T-R)
December 14 (F)	Last day of classes (MWF)
December 15 (S)	Final Examinations for Saturday classes
December 17-20 (M-R)	Final examinations
December 20 (R)	Semester closes

SPRING SEMESTER, 1980

January 7 (M)	Faculty Reports
January 8-10 (T-R)	Registration
January 11 (F)	Faculty Professional Development
January 12 (S)	Saturday classes begin
January 14 (M)	Classes begin
January 18 (F)	Last day for tuition refund
January 25 (F)	12th class day
February 22 (F)	Faculty Professional Development
March 9-16 (S-S)	Spring Break
March 17 (M)	Classes resume
April 4-6 (F-S)	Easter Holidays
April 7 (M)	Classes resume
May 1 (R)	Last day to withdraw "W"
May 6 (T)	Last day of classes (T-R)
May 9 (F)	Last day of classes (MWF)
May 10 (S)	Final examinations for Saturday classes
May 8 & 13 (R & T)	Final examinations for T-R classes
May 12 & 14 (M & W)	Final examinations MWF classes
May 14 (W)	Graduation
May 14 (W)	Semester closes

SUMMER SESSIONS, 1980

First Summer Session

May 26 (M)	Memorial Day Holiday
May 27 (T)	Registration
May 29 (R)	Classes begin
May 30 (F)	Last day for tuition refund
June 3 (T)	4th class day
June 26 (R)	Last day to withdraw "W"
July 2 (W)	Final examinations
July 2 (W)	Semester closes

Second Summer Session

July 3 (R)	Registration
July 4 (F)	Fourth of July
July 7 (M)	Classes begin
July 8 (T)	Last day for tuition refund
July 10 (R)	4th class day
August 4 (M)	Last day to withdraw "W"
August 8 (F)	Final examinations
August 8 (F)	Semester closes

Administration

North Lake College Administration

President . . . . . Donald L. Newport
Vice President of Instruction . . . . . Glen I. Bounds
Vice President of Student Services. . . Walter H. Bowie
Vice President of Business Services . . Mike E. Howard
Associate Dean of Technical/
Occupational Programs . . . . . Clifton A. Weaver
Associate Dean of Continuing
Education . . . . . Rick R. Bolin
Associate Dean/Learning Resources
Center . . . . . Robert E. Spears
Assistant Dean/Evening Programs . . . . . Joel Vela
Director of Admissions and
Registration . . . . . Stephen Twenge
Director of Counseling . . . . . Bruce Thomas
Director of Financial Aid . . . . . Paul T. Chapman
Director of Public Information. . . Sue Stallings Anders
Director of Student Services. . . . . Nancy L. Evans
User Coordinator/Research . . . . . Lynn Cole

Division Chairpersons

Business and Management . . . . . W. Gary Bacon
Communications and Humanities . . . . . Gary D. Swaim
Mathematics and Technology . . . . . .
Science and Technology . . . . . B. T. Anderson
Social Science and Physical
Education . . . . . Martha Hughes

Telephone Listings

Admissions and Registration. 659-5220
Business Office 659-5244
Community Service Programs. 659-5200
Computer/Research Coordinator 659-5232
Evening Administration. 659-5205
Financial Aid. 659-5226
Library. 659-5347
Placement and Cooperative Education 659-5371
President 659-5229
Public Information. 659-5230
Security and Safety. 659-5300
Technical Occupational Programs 659-5237
Vice President of Instruction 659-5240
Vice President of Student Services. 659-5242
Vice President of Business Services 659-5235

The Dallas County Community College District

Chancellor ..... Bill J. Priest
Vice Chancellor of Academic Affairs ... R. Jan LeCroy
Vice Chancellor of Business Affairs.... Walter L. Pike
Assistant Chancellor of
Operations and Planning ..... Steve K. Mittelstett
Director of Computer Services ..... James R. Hill
Director of Development..... James L. Richardson, Jr.
Director of Personnel ..... Quincy Ellis
Director of Program Development..... Linda Coffey
Director of Public Information..... Claudia Robinson
Director of Special Services ..... Bonny S. Franke
Director of Technical Services ..... Paul E. Dumont

History and Purpose of the Dallas County Community College District

The Dallas County Community College District's seven innovative educational communities are dedicated to a common goal: serving in the best possible way the complex, varied and ever-changing educational requirements of a growing metropolitan community.

Each of the District's seven colleges — North Lake, Brookhaven, Cedar Valley, Eastfield, El Centro, Mountain View, and Richland — is therefore committed to providing every person in Dallas County a quality educational experience, whether the person is a youth setting forth toward a degree in medicine, or an adult wanting to enrich his leisure hours with an interesting hobby.

There is a place for a student who wishes to spend a year or two preparing himself to enter a trade or profession, and a place for an employed person who wants to further his training in his occupational field.

There is a place for the very bright high school student who is ready to undertake college-level training in advance of his graduation from secondary school, and a place for the high school drop-out who has changed his mind about the necessity of education in today's complex, demanding society.

Of primary importance to the District's goal is making certain that a student's educational program is tailored to his needs, abilities and ambitions. The philosophy of the District is to create an educational program for an individual, rather than to try to squeeze or stretch an individual to fit an "educational mold."

Every student is offered competent, intensive counseling to help discover his goals and special abilities. Continued guidance is available to update a student's educational program if his goals change during his college experience. This emphasis on counseling, rare for some institutions, is routine procedure at all District colleges.

The District officially became the Dallas County Community College District in 1972, when its philosophy, function and breadth outgrew the traditional "junior" college label. The new name more closely states the District's mission — to meet the educational needs of the entire metropolitan community.

Dallas County voters created the District in May 1965 and approved a $41.5 million bond issue.

The following year the District's first college, El Centro, opened its doors for the fall semester in the heart of downtown Dallas. In August 1970, Eastfield College and Mountain View College enrolled their first students and the multicampus district envisioned by the District planners became a reality. Richland College became the District's fourth college in the fall of 1972.

In September of 1972, the voters of Dallas County approved the sale of an additional $85 million in bonds, thereby paving the way for expansion of existing campuses as needed and the planning and construction of three more colleges. The first priority in the expansion program was the remodeling and enlarging of El Centro College. The first phase of that program was completed in time for the 1976-77 academic year.

In 1977, Dallas County Community College District opened two new campuses, Cedar Valley College in Lancaster, and North Lake College in Irving. Brookhaven College, the final college in the seven-college master plan, opened for enrollment in August, 1978.

How do the District's colleges serve the educational requirements of such a complex family? The answer is found in educational offerings in four broad categories:

—For the student seeking the first two years of work toward the goal of a bachelor's or higher degree, the colleges offer a wide range of courses which are trasferable to senior colleges and universities.

—For the student wishing to enter an occupation at a level above the bottom rung of the ladder, the colleges offer one-year and two-year programs of credit courses covering specific technical/occupational fields.

—For the employed person wishing to improve his knowledge of his field, or train for a move into a new occupational field . . . the colleges offer a broad range of credit and non-credit adult education courses.

—For the person who simply wants to make life a little more interesting, there are community service programs offering a myriad of subjects on cultural, civic and avocational topics.

The DCCD Board of Trustees

The Dallas County Community College District is governed by a seven-member Board of Trustees elected by the registered voters of Dallas County. The Board has the responsibility of formulating broad public policy for the District and ultimately provides review and control of District activities.

The 1979-80 Dallas County Community College District Board of Trustees includes (standing) Bob Beard, Bart Rominger, J. D. Hall, Don Buchholz and (seated) Jerry Gilmore, Pattie T. Powell (Chairman), Bill J. Priest (Chancellor) and Robert Power.

The Philosophy and Purpose of North Lake College

North Lake is the culmination of years of planning to build a college center which makes learning opportunities accessible to all the citizens of the area.

This accessibility is expressed in every aspect of North Lake — from its educational programs to its involvement with surrounding communities, their people, organizations and industries.

The college is a beautiful facility — designed to provide you with a pleasant, stimulating environment in which to explore new educational opportunities. And those opportunities are designed so that you — as a respected consumer — have the widest possible range of choices to fulfill your educational needs and goals throughout life.

For example, nearly all our programs allow you to progress based upon your ability to learn and perform the required objectives without freezing you into a set time requirement that does not consider your individual learning rate or needs. Going a step further with this concept, you'll find all programs at North Lake are based upon performance objectives so that you will know exactly what is required for successful completion. Another unique feature of North Lake is its dedication to providing a variety of "earn and learn" experiences so that the reality of the everyday world of work is integrated with the classroom.

In light of North Lake's committment to you as a consumer of quality educational offerings, we are proud to consider our $21,000,000 campus a people place — where all are welcome to learn, grow and experience.

In spirit our campus extends throughout the community — for the college looks upon the total community as having potential for teaching and learning. Our support for and involvement with the total community provides you as a student the opportunity to see what a partnership between education and society at large can produce. And the benefits for you are certain. Your involvement with North Lake will not be an ivory tower experience but one that will prepare and assist you in finding success and enrichment in the world of work, community and family.

The educational process is a human one and if it is to be really successful, that process must continue throughout life. As we look to the future, we know that rapid change is the one constant we can count on. In all likelihood, you will have a need for further education five, ten or twenty years from now and you will be able to count on North Lake in that future as well as today. The college will work hard to assure that you feel a part of the institution throughout your life and to welcome you back at any time for further educational development or enrichment.

After all, your success is North Lake's success. You are important to us.

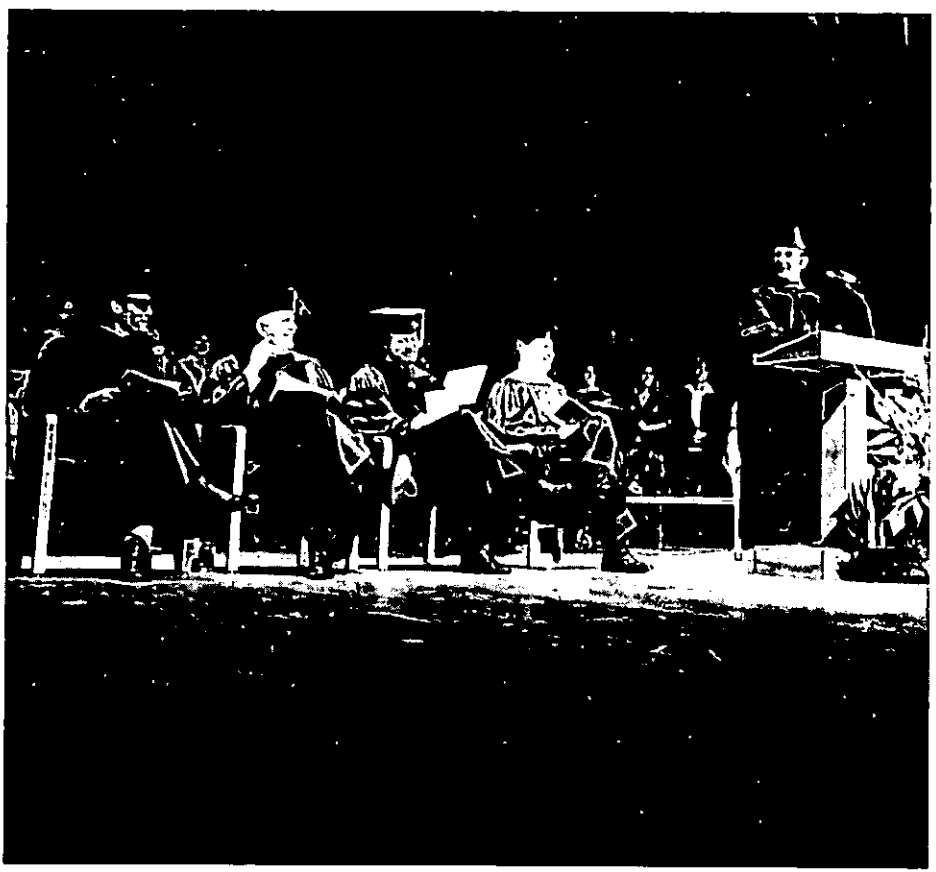
Donald L. Newport
President

Accreditation and Affiliation at North Lake College

Colleges of the Dallas County Community College District are members of the American Association of Community and Junior Colleges and are recognized and sanctioned by the Coordinating Board of the Texas College and University System. The academic transfer curriculum is coordinated with senior colleges and universities to facilitate the transfer of credits to those institutions. North Lake College enjoys candidacy status with the Southern Association of Colleges and Schools. All sister colleges of the District have enjoyed the same well considered relationship at this time in their development with this accrediting agency and are proud of the support shown our colleges by this prestigious organization.

League for Innovation

North Lake College of the Dallas County Community College District is a member of the League for Innovation in the Community College. Sixteen outstanding community college districts throughout the nation compose the League membership. Innovative experimentation and the continuing development of the community college movement in America are the purposes and goals of the League. Membership commits the Dallas County Community College District to research, evaluation and cooperation with other community college districts in providing the best possible educational program and fullest utilization of its resources to serve the needs of its community.



ADMISSIONS AND REGISTRATION

General Admission Policy

The College's admission policy is "open door." It insures that all persons who can profit from post-secondary education will have an opportunity to enroll.

Application Information

Applications will be accepted any time prior to registration. Since registration priorities are assigned according to the date an applicant fulfills all admission requirements, applicants should plan to submit applications at least three weeks before registration to insure adequate counseling and schedule planning.

Applications received after this date will receive a low priority. All applicants are limited in their selection of classes to those available when they register.

Enrollment is available in certain courses at times other than regular semester registration. Consult the registrar's office for information.

Admission Requirements

1. **Beginning Freshmen:**
   Students enrolling in college for the first time may apply if they are:
   - A graduate from an accredited high school.
   - A graduate from an unaccredited high school who is eighteen years of age.
   - A non-high school graduate who is eighteen years of age and whose high school class has graduated.
   - A high school student recommended by the high school principal. In this case, a limited number of high school seniors may be concurrently enrolled for special study, but not for more than six hours per semester, providing the student is making normal progress toward high school graduation.
2. **Transfer Students:**
   - College transfer applicants will be considered for admission on the basis of their previous college record. Academic standing for transfer applicants will be determined by the Office of Admissions based on the standards established by the College.
   - Students on scholastic or disciplinary suspension from another institution must peti-

tion via the Admission Office to the Committee on Admissions and Academic relations for special approval.

3. **Former Students:**
   - Former Dallas County Community College District students will be required to submit an application for readmission to any one of the District colleges. A student will not be readmitted to any college within the District if he or she has unsettled financial debts at any of the District Colleges.
4. **Non-Credit Students:**
   - Students seeking enrollment for non-credit courses are directed to contact the Division of Community Service Programs.

Exceptions to these requirements will be referred to the Committee on Admissions and Academic Relations.

International Students

The College is authorized under Federal Law to enroll non-immigrant alien students. However, foreign students are not admitted until all admission requirements are complete. In addition to admission requirements for all other students, international students must demonstrate proficiency in English, provide evidence of financial stability, and meet with the foreign student advisor for general counseling concerning his potential for profiting from the educational programs of the College before admission can be finalized.

Admission procedures for international students are regulated by the President of the College and may require his permission for enrollment.

Equal Educational Opportunity Policy

The college is committed to providing equal educational and employment opportunity regardless of sex, marital or parental status, race, color, religion, age, or natural origin. Title IX of the Educational Amendments of 1972 prohibits discrimination on the basis of sex in any educational program or activity receiving federal financial assistance by way of grant, contract, or loan. Title VI of the Civil Rights Act of 1964 is similar in its prohibition of discrimination on the basis of race, color, sex or natural origin. Equal educational opportunity includes: admission, recruitment, extracurricular programs and activities, housing, facilities, access to course offerings, counseling and testing, financial assistance, employment, health, and insurance services, and athletics. The college is also committed to equal

opportunities for the physically or mentally handicapped in compliance with federal regulations, Sec. 504, Rehabilitation Act of 1973.

Student Grievances

Student grievances shall be handled in accordance with the existing administrative channels of the college. When a student believes a condition of the college to be unfair, unjust, inequitable, or discriminatory, an appeal can be made to the administrative authority in charge of that area. Appeals to higher administrative authority shall be considered on the merits of the case and in compliance with the foregoing guidelines. Please contact the Office of Student Services for further information.

Admission Procedures

The following material must be submitted to the Office of Admissions before a student's entrance file is considered complete:

- An application for admission
- an official transcript from the last school (high school or college) attended. Transcripts are required by the college's accrediting agency and are important for program advising in the Counseling Center. Students who are seeking a certificate or associate degree and veterans receiving VA benefits are required to submit official transcripts of all previous college work prior to the end of the first semester. An official transcript is one that is sent directly to North Lake from another college.
- written proof from a medical office of
  — a negative tuberculin skin test or chest X-ray
  — a polio immunization if the applicant is under 19 years of age
  — a diphtheria/tetanus injection within the last ten years

This medical proof is required by state law (Senate Bill 27).

Flexible Entry

Each semester the Dallas County Community College District and North Lake offer a variety of courses on a "flex-entry" basis. This means a student can enroll in and complete a course after the regular semester has begun. Flex-entry courses are offered on a space available basis according to student demand and instructional division approval.

Courses from all divisions of the college can be offered on a flex-entry basis and include course offerings in Business, Science, Mathematics, Technical/

Vocational areas, career programs, Social Sciences, Humanities and Communications.

Generally, flexible entry classes begin on the first Monday of the month and registration is held the preceeding Wednesday and Thursday. Information on which classes will be offered during a particular flex entry period is available in the Registrar's office. Flex-entry registration will be held in the Registrar's office.

Course work for flex entry classes msut be completed by the official end date of that class. Because instructor approval is required, students are encouraged to go through counseling when planning on taking flex-entry course work. There is a recommended academic load for flex-entry students which is as follows:

For students enrolling via Flex-Entry in	. . . the recommended Academic Load is
October	9 credit hours
November	6 credit hours
February	9 credit hours
March	6 credit hours
April	3 credit hours

Flex entry classes are beneficial to students who wish to begin course work or to add courses prior to the start of the next semester.

Concurrent Enrollment

Each college in the Dallas County Community College District has no geographical boundary restrictions for enrollment at any of its campuses. Admission requirements for all of the colleges are established by the DCCCD Board of Trustees and are the same for all District colleges. Students may enroll in more than one college at the same time.

Transfer of Credits

Transfer credit will be given for all passing work completed at accredited colleges and universities. The Admissions Office will be responsible for the evaluation of all transfer credit.

Students who are admitted with a grade point deficiency cannot graduate from this college until this deficiency has been cleared.

Credits earned in military service-connected schools or through the U.S. Armed Forces Institute will be reviewed by the Director of Admissions and credit granted if applicable.

Tuition

Tuition is charged on a sliding scale according to the number of credit hours in which a student is enrolled and his place of legal residence.

Tuition is subject to change without notice by the Board of Trustees or the Texas Legislature.

If a student believes his residence status has changed at any time during his enrollment, it will be the student's responsibility to complete a written request for change of status in the Registrar's Office.

Tuition — Fall or Spring Term

Semester Cr. Hours	Fees*	Dallas County Tuition	Out-of-District Tuition	Out-of-State Tuition	Out-of-County Tuition
1	1	25	25	40	200
2	1	25	40	80	200
3	1	25	60	120	200
4	5	25	80	160	200
5	5	30	100	200	200
6	5	36	120	240	240
7	8	42	140	280	280
8	8	48	160	320	320
9	8	54	180	360	360
10	10	60	200	400	400
11	10	64	204	440	440
12	10	68	208	480	480
13	10	72	212	520	520
14	10	76	216	560	560
15	10	80	220	600	600
16	10	84	224	640	640
17	10	88	228	680	680
18	10	92	232	720	720
19	10	96	236	760	760
20	10	100	240	800	800

*Fee is the same for In-County, Out-of-District, Out-of-State and Out-of-County enrollees.

Tuition — Summer Session

Residents of Dallas County:

1-6 Credit Hours — $10 per credit hour, with a minimum of $25.

7 Credit Hours — $64.

Residents of Other Texas Counties:

1-6 Credit Hours — $30 per credit hour.

7 Credit Hours — $184.

*Non-Texas Residents:**

1-6 Credit Hours — $45 per credit hour.
7 Credit Hours — $310.

Out-Of Country Residents:

1-6 Credit Hours — $45 per credit hour, with a minimum of $100.
7 Credit Hours — $310.

*A non-resident student is hereby defined to be a student less than eighteen (18) years of age, living away from his family and whose family resides in another state or whose family has not resided in Texas for the twelve (12) months immediately preceding the date of registration, or a student eighteen (18) years of age or older who resides out of the state or who has not been a resident of the state twelve (12) months immediately preceding the date of registration.

Special Fee and Charges

Student Service Fee:

1-3 Credit hours	$1
4-6 Credit hours	$5
7-9 Credit hours	$8
10-20 Credit hours	$10

Laboratory Fee (per lab)

$2 to $8 per semester

Physical Education Fee:

$5 a semester

(Note: Fees are the same for all students despite residency classification.)

*Private Music Lessons Fee:***

$20 per ½ hour.
$35 per hour.
maximum charge for one course

Audit Fee:

The charge for auditing a course is the same rate as taking a course for credit regardless of the number of hours enrolled except that a student service fee is not charged.

*Credit by Examination:****

$20 per exam.

**Available only to music majors enrolled for 12 hours or more.
***This fee can change without prior notice.

Additional Fees

Additional fees may be assessed as new programs are developed with special laboratory costs. These fees will always be kept to a basic practical minimum for the program involved. A graduation fee is not assessed students receiving a degree; however, each student taking part in the commencement exercise will pay for cap and gown rental.

Refund Policy

The Refund Policy is based on the fact that student tuition and fees provide only a fraction of the cost of providing educational opportunities. When a student enrolls in a class, he reserves a place which cannot be made available to another student unless he officially drops the class during the first week of the semester. Also, a student's original enrollment represents a sizeable cost to the District whether or not he continues in that class. Therefore, a refund will be made only under the following conditions.

- *No 100% refund is granted unless college error is involved.*
- *An 80% refund of tuition and fees may be obtained through the date noted in the college calendar. 80% refund will be given through the first two class days of a six weeks summer session or Fastrak semester. Refunds for flexible entry courses will be considered through completion of the second day of class from the date of enrollment.*
- *Credit by Examination: No refund will be given for advanced Credit by Examination. No refund will be given for advanced placement or CLEP exams.*
- *A physician's statement must be submitted with petitions related to medical reasons for withdrawing from college.*
- *Requests for refunds must be submitted before the end of a semester session for which the refund is requested.*
- *A refund of less than $4 for tuition and/or fees will not be made.*
- *Refund Policy forms are available in the office of Financial Aid and Vice President — Student Services.*

A student who feels that his refund request is due to an extenuating circumstance beyond the limits of the refund policy should be explicit when completing the refund form. All requests for refund will be referred to the Refund Petition Committee. The Committee's recommendations are made to the Vice President — Student Services who notifies the student of the action to be taken. Refund checks normally require a minimum of one month from date of approval.

Checks returned by the student's bank to the college Business Office must be paid with cash, or a cashier's check within the time limits prescribed by the returned check notification letter. An additional fee will be added for all returned checks. If a check for tuition payment is returned, the student's enrollment will be considered void.

Servicemen's Opportunity College

The colleges of the Dallas County Community College District, in cooperation with other community colleges in the United States, participate in the Servicemen's Opportunity College. This program enables the institution to plan an educational experience with the serviceman regardless of his mobility pattern.

For further information, contact the Office of Financial Aid.

Financial Aid

Our college offers a full range of financial aid programs. For additional information see page 33.

Advisement Procedures

When students receive their letter of acceptance, they will be invited to an advisement session. This session may be conducted individually or as a group with a counselor; however, beginning freshmen are expected to attend a New Student Orientation. It is designed to help students make schedule choices based on assessment of courses or programs. The half-day session is designed for students who are enrolling in college for the first time and who expect to attend full-time.

A variety of diagnostic instruments may be used for assessment and placement in courses or programs; however, none are required for admission. These instruments are used as counseling tools for more reliable placement. For those students who wish to send their ACT scores for placement, use the code for this college (4141).

Developmental Studies are provided for those students who may require developmental assistance in reading, writing, or math. Test data, transcripts or previous work, and counseling assessment may be used to determine placement in this program.

Name, Address, and Social Security Number

Students are reminded to inform the Office of the Registrar of any changes which occur in their name or address. All applicants are asked to furnish a social security number which is used as a student's identification number and to insure accuracy of student records.

Family Educational Rights and Privacy Act of 1974

In compliance with the Family Educational Rights and Privacy Act of 1974, Federal Law 93-380, information classified as "directory information" may be released to the general public without the written consent of the student. Directory information is defined as:

1. Student name
2. Student address
3. Telephone listing
4. Dates of attendance

5. Most recent previous educational institution attended
6. Other information including major field of study and degrees and awards received.

A student may request that all or any part of the directory information be withheld from the public by making written request to the Registrar's office during the first twelve class days of a fall or spring semester, or the first four class days of a summer term. If no request is filed, information will be released upon inquiry. No telephone inquiries will be acknowledged; all requests must be made in person.

No transcript or inquiries concerning an academic record will be released without WRITTEN CONSENT from the student specifying the information to be given out, except as specified by law.

ACADEMIC INFORMATION

Degree Requirements

The College confers the Associate in Arts and Sciences Degree or the Associate in Applied Arts and Sciences Degree upon students who have completed all the general and specific requirements for graduation.

Each degree candidate must earn the last 15 hours as a resident student in the District colleges or accrue 45 hours in residence.

The degree will be granted by the college at which the student took the last 15 hours or where the majority of hours were accrued.

Correspondence work submitted for graduation credit must be approved by the Registrar. No more than one-fourth of the work required for any degree or certificate may be taken by correspondence.

Associate in Arts and Sciences Degree

The Associate in Arts and Sciences Degree is designed for the student who wishes to pursue a two-year liberal studies degree and/or transfer to a four-year institution for the baccaulareate degree.

A student must have a total of 60 hours and present an average grade of at least "C" (2.0).

These 60 hours may be earned at any Dallas County Community College District college and must include:

English 101-102, plus an additional 6 hours of English. 12 Hours

Laboratory Science (Music majors are exempt from this requirement. (Check listings under subject field). 8 Hours

History 101-102* and **Government** 201-202* (No substitutions allowed). 12 Hours

Humanities: To be selected from Theatre 101, Art 104, Music 104, Humanities 101, or Philosophy 102.

A maximum of two physical education activity hours may be counted as credit toward requirements for graduation. All students who expect to transfer to a four-year institution are urged to complete their four-semester requirement in physical education during their freshman and sophomore years.

Courses numbered 99 and below may not be counted toward the 60-hour minimum.

The student is urged to consult the catalog of the institutions to which he may transfer for their special requirements. These catalogs should be used by the student and his advisor as the basis for the program plan.

*Only 3 hours of History or 3 hours of Government credit may be earned by credit-by-examination. (CLEP credit does not meet this requirement.)

Associate in Applied Arts and Sciences Degree

The Associate in Applied Arts and Sciences Degree is designed for the student who wishes to study for a two-year degree in technical and occupational studies. This degree is designed to enable students to enter the job market in their chosen field. In many cases universities are willing to accept hours accumulated toward this degree as applicable to a four-year technology degree. Students should consult the university to which they wish to transfer for transferability information.

A minimum of 60 hours exclusive of Art 199, Music Recital 199, and Theatre 199 must be presented for the degree with an average grade of at least "C" (2.0). All of the prescribed requirements for the specific technical or occupational program for which the student is enrolled must be completed. These programs may also have criteria for successful completion beyond degree requirements. The student is referred to the "Technical Occupational Program" section of this catalog for a more detailed explanation.

A maximum of two physical education activity hours may be counted as credit toward graduation. Courses numbered 99 and below cannot be included to meet the degree or certificate requirements.

Certificate Plans

The requirements one must meet to be awarded a certificate are detailed under specific programs listed in the Career Programs section of this catalog. A "C" (2.0) grade average is necessary to meet the requirements of the certificate program in which the student is enrolled.

Associate in General Studies Degree

The Associate in General Studies Degree is a creatively open-end degree program that focuses on education for individual development. The curriculum, or pattern of courses, is an individualized selection of courses drawn from adult continuing education courses, liberal studies, technical/occupational course offerings and non-credit community service courses.

To earn this degree a student, under the advisement

of the Committee on General Studies, must complete at least 60 General Studies Units (GSU)s with at least the last 15 GSUs completed at North Lake College.

One GSU is the equivalent of one semester credit hour or 1.5 C.E.U.s (Continuing Education Units) earned in Community Service non-credit courses. A C.E.U. is the equivalent of ten contact hours of participation in an organized continuing education program, such as those found in Community Service courses. C.E.U. equivalents for continuing education courses in Community Service are indicated in the Community Service catalogs.

The Associate in General Studies Degree student works with an advisor designated by the Committee on General Studies to build the individualized degree plan. The proposed plan for each student must be reviewed and approved by the entire committee before it is officially accepted.

Associate in General Studies Degree Requirements:

The student must earn at least nine (9) GSUs in each of at least four of the following five areas of study for a total of 36 GSUs:

1. Communication Skills — English, Communications, Journalism, Speech, etc.
2. Personal Growth & Development — Psychology, Human Development, Personal Finance, etc.
3. The Dimensions of Society — History, Sociology, Government, Economics, Business, etc.
4. Experiential Learning — Specially designed courses which can include a wide range of learning experiences under the college's auspices including but not limited to internships, short or longterm seminars or working experiences. Such courses are approved under the guidance of the A.G.S.D. advisor.
5. Humanities & Recreation — Physical Education, Art, Music, Theatre, Humanities, etc.

The student must achieve a cumulative grade point average of 2.00 ("C") or better on credit courses applied toward graduation. Performance in non-credit courses must meet course standards for awarding of C.E.U.s.

No more than 30 semester hours of credit which have been applied toward a previously earned college degree may be transferred for use in the Associate in General Studies Degree program.

No more than nine (9) GSUs earned in Developmental Studies may be applied toward the A.G.S.D.

No more than fifteen (15) GSUs earned in Community Service/Continuing Education courses (all earned in the Dallas County Community College District) may be applied toward the A.G.S.D. For further information on the Associate in General Studies Degree contact the Admissions Office or the Continuing Education Office.

Procedure for Filing Degree and Certificate Plans

1. The student should request a degree plan from the Admissions Office upon completion of 30 semester hours. Official transcripts of all previous college work must be on file at the time of the request for a degree plan.
2. A student following a 1-year certificate program should request an official plan during his first semester.

Candidates for any degree or certificate must meet the requirements as set forth in the catalog for the year of first enrollment unless he elects to graduate under the requirements of a later catalog. The choice to graduate under the original catalog assumes a student has pursued a program of study with reasonable diligence. A candidate must indicate the catalog of his choice when he files his degree plan.

To qualify for a second degree or certificate a student must fulfill the residence requirement for the second degree and must complete all required courses in the plan for the second degree or certificate.

Recommended Academic Load

No student will be permitted to carry more than 18 semester units of course work or more than 5 classes plus physical education without permission of the Director of Counseling. Employed students are advised to limit their academic loads in accordance with the following recommendation: If a student carries a full college load (12 semester units or more), he should not work more than 20 hours per week. If he must work more hours, he credit unit load in college should be reduced proportionately.

The recommended load limit in a 6-week summer session is 6 semester units of credit. A total of 14 semester units of credit is the maximum that may be earned in any 12-week summer period.

Change of Schedule

Extreme care should be exercised in the registration process. A student should schedule only those courses for the days and hours he is able to attend. As a general

policy, class changes are only authorized for students who have been incorrectly placed.

The change is not completed until it has been processed by the Registrar.

Dropping a Course or Withdrawal from College

A student must drop a class or withdraw from college in the following manner:

- Obtain a drop or withdrawal form from a counselor and follow the procedure outlined.
- Should circumstances prevent a student from appearing in person to withdraw from college, he may withdraw by mail by writing to the Director of Admissions. No drop or withdrawal requests are accepted by telephone.

Students who drop a class or withdraw from college before the deadline will receive a "W" in each class from which they have withdrawn. The deadline for receiving a "W" is two weeks prior to the end of the semester. After that time a student will receive a performance grade in the course.

Credit by Examination

A person who believes he is qualified by experience or previous training may take a special examination to establish credit in a particular course. Not all courses are approved for credit by examination. A list of those credits which may be established through this method is available in the Testing Center.

Students will be allowed to earn as many credits through the credit-by-examination procedure as their needs require and abilities permit. However, the minimum number of hours as a resident student required for a certificate or a diploma may not be reduced through credit-by-examination.

Credit by examination may be attempted only one time in any given course. A score of "C" is required to receive credit. Only currently enrolled students will have the semester hours earned through examination become part of their permanent record. Request for examinations should be made to the appropriate division office which will provide the necessary petition forms and advise the student of the procedure.

A student, whether part-time or full-time, will pay $20 per exam. This fee must be paid prior to taking the exam and is nonrefundable. Upon transferring to a four-year institution, final acceptance of credit by examination is determined by that institution. No more than three credit hours can be earned by credit by examination for the degree requirements in History and Government.

Auditing a Course

Any person 18 years of age or older may, with the consent of the instructor, and provided that space is available, enroll in the status of audit. This student may attend classes but not take the examinations or receive credit for the course unless he enrolls in the course again as a regular student.

The same fee is charged for auditing as for credit.

Procedures for auditing a course will be administered by the Registrar. No audits will be approved prior to the first day of the second week of classes in any semester. Most lab courses may not be audited.

The combined number of semester hours in credit courses and audit shall not exceed 18.

Bad Checks

A student is not considered enrolled until tuition and fees are paid. Checks returned to the Business Office must be paid in cash.

Grade Reports

At the end of each semester, grade reports are issued to each student. Transcripts will be withheld if the student does not have all required student information on file in the Registrar's Office or if any financial obligations to the College have not been paid. (Cf. Standard of Conduct for Students: "Financial Transactions With the College")

Scholastic Standards: Grades and Grade Point Averages

Final grades are reported for each student for every course undertaken according to the following grading system:

Grade	Interpretation	Grade Point Value
A	Excellent	4 points
B	Good	3 points
C	Average	2 points
D	Poor	1 point
P	Progress	Not Computed
F	Failing	0 points
I	Incomplete	Not Computed
W	Withdrawn	Not Computed

Grade points earned for each course are determined by multiplying the number of points for each grade by the number of credit hours the course carries. A student's grade point average is computed by adding the total grade point values for all courses for which grade point values may be computed ("performance grade") and dividing by the appropriate number of credit hours attempted during the same period.

I Grade

Incomplete and Progress Grades

An Incomplete grade may be awarded when a student who has made every effort to complete a course cannot do so within the time constraints of that course. An **Incomplete Contract,** setting forth requirements for the satisfactory completion of the course, must be agreed upon and signed by the instructor, the student and the Division Chairperson and submitted with the final grade report. In those cases where it is necessary to submit an Incomplete Contract without the student's signature, the instructor must accompany the contract with a statement indicating that the student is aware of, and in agreement with, the conditions and requirements of the contract.

P Grade

The **P** grade may be awarded in those cases when a student has attended class regularly and the instructor has evidence that the student has made significant progress toward meeting course objectives but has **not** fulfilled those objectives at a level appropriate for the awarding of a performance grade (A-D).

Students wishing to earn credit for a course in which they have earned a **P** grade must re-enroll in that course.

Definition of Acceptable Scholastic Performance

College work is measured in terms of semester credit hours or units. The number of semester hours or units of credit offered for each course is included with each course description. Acceptable scholastic performance is the maintenance of a grade point average of 2.0 (on a four point scale) or better. A student may not be graduated from any degree or certificate program unless he has a cumulative grade point average of 2.0 or better. Grade points and hours earned in courses numbered 99 and below are computed when deriving a student's scholastic standing, but are not computed in determining graduation requirements.

Scholastic Probation and Suspension

The policies on scholastic probation and scholastic suspension apply to full-time students (12 semester hours or more) and to part-time students when they have attempted a total of 12 semester hours. The following criteria will be used to determine academic standing:

- Students who have completed one or more semesters in a college will be placed on probation if they fail to maintain a 2.0 cumulative grade point average.

- Students who have been placed on scholastic probation may be removed from probation when they earn a 2.0 cumulative grade point average.
- Students on scholastic probation who achieve either a cumulative grade point average of 1.5 or above or a previous semester grade point average of 2.0 or above may continue their studies on scholastic probation.
- Students on probation who do not meet the requirements of paragraph 3, will be placed on scholastic suspension.

The periods of scholastic suspension are: suspension for the first time — one regular semester, and subsequent suspension — two regular semesters.

Students on scholastic probation are expected to enroll in a Human Development course. Under special circumstances a counselor may waive this course for probationary students.

Suspended students must file a petition for readmission. The conditions for readmission are established and administered by the Vice President — Student Services.

Student Transfer to Career Program

Any student pursuing an academic transfer program who wishes to transfer to a career program may have his earned credits evaluated for the possibility of disregarding any grades of his choice below "C" as long as the student follows the career program. This procedure is contingent upon the student remaining in a career program. A change to an academic transfer program places the student under the original conditions of that program.

This procedure will apply both to our students and to the students transferring from other institutions. Any student wishing to take advantage of this opportunity should state his intentions in writing to the Director of Admissions prior to registration and assume the responsibility of informing his counselor during preregistration advisement.

Library Obligations

Willful damage to library materials (or property) or actions disturbing to other users of the library may lead to revocation of library privileges. Cases involving such damage will be referred for further action to the appropriate authorities.

All books and other library materials must be returned before the end of each semester. No grades will be sent to students who have not returned all such materials or who have unpaid library fines. No transcripts of grades may be sent until the library record is cleared. Library fines are payable at the college Business Office.

Class Attendance

Students are expected to attend regularly all classes in which they are enrolled. Class attendance is the responsibility of the student. It is also the responsibility of the student to consult with the class instructor when an absence occurs.

Instructors are responsible for appropriate notification of attendance policy and procedures to all students enrolled in their classes. Generally, when absences have reached a total equal to the number of class hours as credit for the course, a drop for excessive absences will be filed by the instructor. The student will be notified by a letter from the Admissions Office sent to the student's address of record. The effective drop date will be stated in the warning letter. Students who desire to remain in class must contact the instructor. With the instructor's approval, a student may be reinstated.

Students dropped for excessive absences prior to the published withdrawal deadline will receive a grade of "W". A student who does not attend class during the first 12 days of a long semester (or the first 4 days of summer semesters) will be dropped and will not receive a grade for that course.

Repetition of Courses

In computing cumulative grade-point averages, only the latest grade earned in repeated courses will be included. However, transcripts should indicate all work completed in the District. This policy shall apply, even if the latest grade is lower than the preceding grade. In cases where a student withdraws from a course which he is repeating, his cumulative grade-point average shall be calculated by using the immediately preceding grade in the same course.

Honors

A full-time student who has completed at least 12 hours of credit and who earns a grade-point average of 3.00-3.49 will be listed on the college Honor Roll. Full-time students who complete at least 12 hours of credit and who average 3.50-4.00 will be placed on the Vice President's Honor List. A part-time student who is taking 6-11 credit hours and who maintains a 3.5 or higher grade-point average will receive Academic Recognition. The Honor Roll, the Vice President's Honor List and the Academic Recognition List will be published each semester.

Transcripts of Credit

The Registrar's Office will send the student's transcript upon request to any college or agency named. However, a student's official transcript may be withheld until he has settled all financial obligations to the

college. The first transcript will be issued without charge; there is a $1 charge for each transcript requested thereafter.

Student Classification

- Freshman: A student who has successfully completed fewer than 30 semester hours.
- Sophomore: A student who has successfully completed 30 or more semester hours.
- Part Time: A student enrolled in fewer than 12 semester hours in a given semester.
- Full-Time: A student enrolled in 12 or more semester hours in a given semester.

Graduation

An annual graduation ceremony is held at the conclusion of the spring semester.

1. Students who have degree plans filed in the Registrar's Office and who anticipate completion of the degree requirements by the end of the summer session are eligible to participate in the spring ceremony. Such participation is ceremonial and confers on a student no rights to a degree.
2. Application for graduation must be made in the Registrar's Office prior to the deadline announced by the Registrar.
3. A graduate is expected to participate in the ceremony.

STUDENT SERVICES

Our college strives to provide maximum educational opportunities, personal, social, cultural and career development for all students. Such development is stimulated through programs of coordinated college services as needed by any individual student or by groups of students. These services are evaluation, counseling, planning, tutoring, and programs of student activities.

The programs and services are planned to meet the needs of all groups and individuals and to furnish support services enabling each student to reach his potential.

Diagnostic Testing Center

The two primary functions of North Lake's Diagnostic Testing Center are to administer:

- Psychological tests of personality, vocational interests and aptitudes.
- Diagnostic tests which make appropriate class placement possible. These tests are strongly recommended to insure student success.

Testing Center

The two primary functions of North Lake's Testing Center are to administer:

- Academic testing for the college instructional programs including ITV courses. Many courses are individualized and self-paced, permitting students to be tested at appropriate times.
- National testing programs, including ACT, GED, CLEP.

Tutoring Services

For students needing special temporary assistance in course work, arrangements for tutoring services can be made through the Counseling Office.

Students are encouraged to seek such services through self referral as well as through instructor referral.

Services for the Handicapped

Services for handicapped students include assistance in securing note-takers, interpreters, mobility aids, and tutors. Programs for handicapped students are coordinated through Student Services.

Counseling Services

Confidential assistance is provided by the counseling staff in any of the following areas:

- Career counseling regarding possible vocational directions to explore, occupational information, or self-appraisals pertaining to job stability and interest.
- Personal-social counseling regarding adjustment within the college community, relating to instructors or to other people, drug matters, marriage counseling or any other concerns which interfere with personal development.
- Small group discussions led by counselors focusing on matters of concern in areas where group feedback can be helpful. Participation in these confidential groups is available as space permits.
- Referral to provide in-depth assistance is necessary for such matters as financial aid, tutoring, job placement, medical or psychiatric problems.
- Testing to provide additional standardized testing information when called for in planning or decision making.
- Tests are available to assess abilities, vocational interests and personality.

Advisement

Academic advisement regarding appropriate course choice, study habits, remedial work or transferring to another college is available through Counseling. Trained paraprofessionals also assist the counselors in this function. Students with declared majors should consult with their faculty advisors within their major field of study.

Consultation Services Available

- Consultation regarding the decision of whether or not to enter college.
- Consultation regarding possible course selections for vocational advancement or for personal enrichment.
- Consultation with area high schools regarding their students enrolling at North Lake.
- Seminars and workshops of a subject-centered nature. Examples are parents interested in their children's development; married couples interested in learning to enrich the communication between themselves; mature people considering return to the classroom after many years absence; military veterans returning to civilian life.
- Because we are a community centered college, advisement and consultation services are also provided to residents who are not yet enrolled.

Financial Aid Programs

The Financial Aid Program is a multi-purpose financial assistance service for students. A major objective is to provide assistance to students who, without such aid, would be unable to attend college. Basic to this philosophy is the belief that the educational opportunities of able students should not be limited by their financial resources.

Requests for information should be directed to the Director of Financial Aid. Students who anticipate the need for financial assistance for college are encouraged to complete an application at least two months prior to registration for the semester they wish to attend. Early application will enable the Financial Aid Office to prepare a realistic financial aid package.

Some of the grant, loan and scholarship programs available to students are outlined in the following paragraphs.

Basic Educational Opportunity Grant (BEOG). Students that enroll for at least 6 credit hours are eligible to apply for this "entitlement grant." Applications are available in many federal offices, as well as in the Financial Aid Office, and are mailed directly by the student to a central processing place indicated in the instructions. The student receives a Student Eligibility Report which he brings to the Financial Aid Office for interpretation and determination of grant amount according to an objective table provided to them by the federal government for that purpose.

Supplemental Educational Opportunity Grant. This grant is authorized under the Higher Educational Amendments of 1965 and amended by the Educational Amendments of 1976. To be eligible students must demonstrate exceptional need and make satisfactory progress toward the completion of their educational goal. Legislation for the SEOG award includes a matching requirement which specifies that aid equal in amount to the SEOG must be provided to the student during the award period. The minimum SEOG award permitted is $200 to $1500 per academic year, depending on the needs, and the total number of applicants and funds available. Students must apply each academic year.

Scholarships. North Lake College offers a limited number of scholarships to students who exhibit scholastic ability and/or need. Individuals, private industries and groups make these scholarships available through the Office of Financial Aid.

Hinson-Hazlewood College Student Loan Program. The necessary requirements for this loan are:

1. Legal residence in Texas.
2. Enrolled or accepted for enrollment for at least a half-time course of study.
3. Established financial need.

The amount of loan for which a student may qualify depends upon the income of his family. Married applicants are qualified by considering the income of both husand and wife.

Qualified students may receive up to $1,500 for the nine-month school session.

Repayment begins between 9 and 12 months after the student ceases to be enrolled for at least half the normal course load. Repayment may extend up to 10 years; however, a minimum payment of $30 a month is required. Interest rate is 7 per cent per annum.

Short-term Loans. A student may borrow up to $100 at no interest if funds are available. This loan must be repaid within 90 days or before the end of the semester in which the money is borrowed.

Bureau of Indian Affairs. For information on educational benefits, an Indian student should contact the nearest BIA office.

Hazlewood Act. Certain veterans who have no remaining V.A. educational benefits can attend Texas State supported institutions with their tuitions and fees waived if they were residents of Texas at the time they entered the services and are now residents of Texas. Contact the Financial Aid office for details.

Social Security Administration. Benefits under this program are available to students who meet the criteria set up by the Social Security Administration. The Office of Admissions and Records acts as liaison between North Lake College students and the Social Security Administration.

Vocational Rehabilitation

The Texas Education Agency, through the Vocational Rehabilitation Division, offers assistance for tuition and fees to students who are vocationally handicapped as a result of a physically or mentally disabling condition. For further information contact Vocational Rehabilitation, 4333 North Central Expressway, Dallas, Texas 75205.

Veteran's Benefits

The Veterans' Benefits Programs for eligible students is coordinated by the Veterans' Affairs Office.

Services of Veterans' Affairs Office include counseling the veteran concerning benefits, V.A. Work Study Programs, financial problems, V.A. loans, career counseling and other areas related to the veteran's general welfare.

When testing indicates that a veteran should enroll in developmental courses such as reading, writing, or math, the student may pursue these courses with no charge to his eligibility. Tutoring services are also available to the veteran who is having learning difficulties in one or more subjects. For assistance in obtaining tutoring benefits, contact the Veterans' Affairs Office.

The veteran student who enrolls in college should be aware of some of the V.A. guidelines which are enforced. Violation of the following policies will cause complications in receiving, or loss of, monthly benefits:

1. Class attendance is mandatory. Failure to attend class will result in suspension from class.
2. Veteran students who plan to enroll in developmental courses must be tested and show a need in basic skills before enrollment in these courses.
3. A veteran enrolled in T.V. courses must be pursuing more on-campus credit hours than hours taken by T.V.
4. A veteran student who has successfully completed credit hours at another college or university must submit a transcript from that college or university before applying for V.A. benefits. The transcript will be evaluated and credit granted where applicable.
5. Only enroll in courses required for your degree program. Information on degree requirements may be obtained from the Registrar's Office.
6. A veteran who withdraws or who is dropped from all courses attempted during a semester will be considered as making unsatisfactory progress by the V.A. and may lose future benefits. A veteran student must also maintain a satisfactory grade point average as outlined in the catalog.

The above listed V.A. regulations are subject to change without notice. Students should contact the Veterans' Services Office in order to be aware of current regulations and procedures.

Campus Employment

The Financial Aid Office will assist any student desiring on-campus employment. Typically, this part-time

employment is designed as a financial aid to assist students while they are in college through:

1. On-campus placement
2. Work-study programs
3. Off-campus student assistantships

Placement Services

The Placement Office will assist any student desiring help in finding off-campus employment.

A placement officer will work directly with students and community employers to locate jobs and students qualified to fill those jobs.

Career placement assistance is available for students nearing completion of their course of study. All students should register with the Placement Office at least one full semester before graduation.

Career Information. A library of career-related literature, including publications from the Women's Bureau, is also housed in the Placement Office and may be checked out by students. Most of this literature is descriptive, designed to provide general information about definite career fields. The library is cataloged alphabetically by career areas and is continually updated.

Revocation of Aid

The Financial Aid and Placement Office reserves the right to review and cancel awards at any time for the following reasons:

- Failure to maintain an acceptable academic record.
- Failure to meet the minimum course load requirements.
- Changes in the financial status of the student or his family.
- Any student in violation of any regulation governing the program from which he is receiving aid.
- It is understood that the student is aware of the conditions under which aid is offered and agrees to meet all the necessary requirements.

Cooperative Work Experience

See page 39 for complete description.

Student Development Office

The Student Development Office develops programs that are visualized as an integral part of the learning experience available at the college.

Through Student Development Programs, the student is encouraged to find new ways of expressing himself, to develop skills in relating to other people, to formulate a new understanding of and respect for himself and his environment.

Student-planned activities such as games, tournaments, speakers, dances, films, art shows, entertainers, intramurals, special-interest groups, clubs, and organizations provide opportunities for a more complete experience for each student.

Student Organizations

Designed to complement the routine of the community college student and provide a means for several students to unite in a common interest or goal, North Lake encourages the formation of and membership in clubs and organizations. Membership in these organizations is open to any student regardless of race, creed, color, or sex. Information regarding participation in any organization may be obtained through the Student Development Office. The Director of Student Development will offer full assistance to interested students in the organizing process.

Student Center

The Student Center contains conference rooms and recreational facilities. The center is open during regular school hours.

Intramurals

Intramurals provide team sports, individual sports and recreational game activities. Interested students should contact the Intramural Director in the Physical Education area.

Intercollegiate Athletics

Participation is available on athletic teams for all full-time students on a voluntary non-scholarship basis who meet additional requirements established by the Metro Athletic Conference.

College Council

The College Council includes students, faculty, staff, and administrators. All have a vested interest in the school and are therefore entitled and urged to participate in its operation.

The College Council allows the total college population to share in the decision-making process and is composed of the following elements: President's Forum, Commissions, and Ad Hoc committees.

Standards of Conduct

The College student is considered a responsible adult. The student's enrollment indicates acceptance of those standards of conduct which appear in the North

Lake College Codes & guidelines to standards of conduct. The guide will be available through the office of Student Services. It is the student's responsibility to obtain this information.

Health Services

The Health Center provides health counseling and education as well as emergency and first aid care.

Confidentiality is maintained. No information is released without written permission from the student. The Health Center refers students to the appropriate outside source for additional treatment if necessary. Each student is responsible for his own transportation.

A small library is maintained containing health-related materials not available in the main library.

The Health Center is staffed with registered nurses and a physician is on call at all times.

Housing

The College does not operate dormitories of any kind nor maintain listings of available housing for students. Students who do not reside in the area must make their own arrangements for housing.

Campus Security

The College Department of Safety and Security is required by state law to "protect and police buildings and grounds of state institutions of higher learning." Since all of the general and criminal laws of the state are in full force and effect within the campus community, specially trained and educated personnel are commissioned to protect not only the physical property of the campus community but also to protect the person and the property of campus citizens. The Security Officers are responsible for enforcing rules, regulations, and Board policies of the District, including a code of conduct for students.

Additional information concerning the parking and traffic code enforced by the College Department of Safety and Security is available from the Office of Safety & Security.

EDUCATIONAL PROGRAMS AND SERVICES

Academic Transfer Studies

Students whose educational objective is the bachelor's degree may complete their first two years at this college before transferring to a four-year institution.

The academic transfer curriculum is coordinated with senior colleges and universities to facilitate the transfer of credits to these schools. See page 21 for further information.

Technical/ Occupational Programs

The College offers a variety of technical/occupational programs which enable students to enter their chosen field as skilled employees after one or two years of college work.

These programs are established only after studies verify that employment opportunities will exist at the time the student completes the training, matching the community's manpower requirements with the ambition and goals of the student.

This realistic approach to occupational education is made possible by the excellent cooperation of local industry, business and public agencies who more and more are looking to the District's colleges for skilled employees.

A continuous liaison is maintained with prospective employers to assist in placement of graduates and to keep the training programs up-to-date with current job requirements.

Recommendations for adding new programs to the College offerings will be made periodically based on community studies which identify additional training needs.

Technical/occupational courses carry college credit leading to a Certificate of Completion or an Associate in Applied Arts and Sciences Degree.

Cooperative Work Experience Education

Cooperative Education recognizes the value of work experience to the student's academic endeavor and provides insight into many careers. Cooperative Education offers the student an opportunity to earn college

credit for the development and achievement of learning objectives which are accomplished through current work experience. Work experience must be related to the student's field of study and occupational goal. This work experience takes place at work training stations approved by the college. The employers must be willing to enter into training agreements with the college and the student employees.

Requirements:

- Students must have completed at least two courses in their occupational major to be eligible for Cooperative Work Experience.
- A full-time student must be enrolled in twelve credit hours or more; two courses must relate to the student's work experience, and up to four credit hours may be in Cooperative Work Experience.
- A part-time student may take up to four credit hours of work experience.
- Part-time students must be concurrently enrolled in a course related to their work experience.
- To enroll in a Cooperative Work Experience course, students must have the approval of their instructor/coordinator.

Credit Earned:

A maximum of 4 hours of credit may be earned per semester. A maximum of 16 semester hours of credit may be earned in Cooperative Education in the total credit hour accumulation toward an Associate Degree.

Seminars:

Required, weekly seminars will be conducted by the instructor/coordinator. These seminars will cover timely topics that will correlate the school and work experiences.

The Co-op office located in the Employment Center on campus is available for further information and co-op counseling.

Evening and Weekend College

In dynamic, growing communities such as those encompassing our college, people are involved. Their community and work involvement often creates a need to develop new knowledge and skills. These involvements may render it impossible for them to attend college dur-

ing normal daytime hours. The Evening and Weekend College program offers these people the same broad spectrum of credit educational programs that is available to full-time day students. Courses are currently offered Monday through Thursday nights and on Saturdays, both on-campus and off-campus at selected community locations (usually public school buildings). As the need warrants, classes will also be scheduled on Friday nights and on Sundays.

The College provides an evening and weekend program of on-campus, off-campus, international studies and telecourse instruction which is sufficiently comprehensive to enable a student to complete a degree or certificate program through attendance only during these periods.

The evening and weekend program offers high quality instruction, excellent facilities, and a variety of student services, including counseling, health, library, bookstore, food service, financial aid, and recreation. Instructors in the evening and weekend program are selected from full-time staff and from outstanding Dallas area educators and other professional specialists who are interested in teaching.

To enroll in the evening/weekend program, call or write the Director of Admissions. Information may also be obtained by contacting the Evening Administration Office.

Telecourses

The College offers a variety of college credit courses via television. The schedule of telecourses, which varies each semester, may include courses in anthropology, astronomy, business, earth science, ecology, biology, English, economics, government, history, humanities, and psychology. Content and credit for these courses are the same as for similar courses taken on campus. Telecourses include the viewing of television programs on KERA Channel 13 each week, plus reading, study guide, and writing assignments. Students come to the campus for an orientation session at the beginning of the semester, for one to four discussion meetings, for three or four tests, and for laboratory sessions as appropriate for lab science courses during the semester. These visits to the campus are normally scheduled so that they may be attended at a time convenient to the student.

Telecourses may be taken as part of a student's total credit load or as the only course in which the student is enrolled. Registration for telecourses may be accomplished by mail or as part of the regular on-campus registration procedures.

International Studies Program

The Dallas County Community College District International Studies Program was developed to enhance the existing curriculum through offering alternative avenues of educational experiences to participating students via travel abroad & to neighboring countries.

International Studies courses are well-planned and organized academic experiences intended to offer students and faculty rare opportunities to familiarize themselves with the cultures, the arts, and the sciences in other parts of the world.

International Studies courses are credit courses taught with an approved course outline under the direction of a full-time instructor.

Generally, International Studies courses are offered during summer sessions. For more information on this program contact the Office of Continuing Education.

Community Service Division

Community Service programs are an important element in the college's commitment to "community" and providing educational opportunities to everyone.

Community Service means many things to many people, but at North Lake it means short-term courses, seminars, workshops, institutes, clinics, conferences, demonstrations and organized continuing education programs on a noncredit basis. Courses are designed and generated in response to the requests and needs expressed by the community and its members.

Additionally, certain community service courses may be applied toward the General Studies Degree. See page 22 for a more detailed description of this degree option.

Generally, there are no entrance requirements or examinations, although certain courses may have age restrictions or may indicate a certain amount of experience is necessary for enrollment. Admission is on a first come, first served basis. All you need to do to register is fill out the form and pay the fee.

Classes and activities are held throughout the year on campus and in a variety of locations throughout our service area. Most of the classes and activities are conducted on weekday evenings, but many are also available on weekdays and on weekends. The community service program is designed so that individuals may explore new fields of study, increase proficiency in a profession, develop a potential, and enrich lives through cultural and recreational studies. Such a program offers opportunities for lifelong learning, cultural and community enrichment, personal entertainment and recreation, and resources for industry, government, and professional groups.

Efforts are made to include classes for all interests and age groups. New courses and programs are added regularly, many created by suggestions from past, present, and potential students who take an active part in the planning process. You are welcome to share your ideas and suggestions with us.

Courses are offered in such areas as real estate; personal money management; business and management; office occupations; vocations and trades; visual arts and crafts; human development; women's programs; special interest; sports, health, and recreation; horticulture; cooking, sewing, and interior decorating; music, dance, and theatre; English and foreign languages; communications; and programs for children and teens.

Community Service instructors are professional men and women from business and industry, government, social service agencies, the community, college faculty and staff, and other educators with outstanding background experience in their fields.

Tailor-made non-credit courses, specifically designed to meet the needs of business, industry, and other organizations and agencies, can be offered either on-campus or in-house. Contact us if your firm or organization has a need or interest we can meet in this fashion.

The full range of student services, with the exception of financial aid, is available to community service students.

Learning Resources Center

The Learning Resources Center (LRC) is more than a library . . . it's a complete learning environment. It's a place where students can go to find resources to supplement or, in some cases, supplant their classroom learning. These resources take on a variety of forms including books, magazines, reference sources, slide/tape, audio-cassettes, video-cassettes, microforms, records, computer assisted instruction, copy machines, and typewriters.

The LRC is particularly concerned with providing ways for students to become more effective learners in conventional classes, in independent study, and in the lifelong pursuit of learning.

The LRC provides other services too. These include: a variety of independent learning experiences for students enrolled in specific courses; a Testing Center which functions as an integral part of LRC instructional support activities; classroom media distribution; media production; and instruction/curriculum revision and development.

CURRICULUM

Divisions of the College

BUSINESS & MANAGEMENT DIVISION

- Accounting
- Banking & Finance
- Bookkeeping
- Computer Science
- Distribution Technology
- Economics
- General Business
- Legal Secretarial
- Office Occupations
- Mid-Management
- Real Estate
- Secretarial Careers
- Small Business Management

COMMUNICATIONS/HUMANITIES DIVISION

- Art
- College Learning Skills
- Communications
- Developmental Reading
- Developmental Writing
- English
- French
- Humanities
- Journalism
- Music
- Philosophy
- Photography
- Spanish
- Speech
- Theatre

MATHEMATICS AND TECHNOLOGY DIVISION

- Blueprint Reading
- Building Trades
  - Carpentry
  - Electricity
- Computer Science
- Developmental Mathematics
- Electrical Apprenticeship
- Mathematics
- Optical Technology
- Private Pilot Ground School

SCIENCE AND TECHNOLOGY DIVISION

- Air Conditioning and Refrigeration
- Astronomy
- Biology
- Chemistry
- Diesel Mechanics
- Earth Science
- Geography
- Geology
- Geography
- Physics
- Solar Energy Technology

SOCIAL SCIENCES/PHYSICAL EDUCATION DIVISION

- Anthropology
- Government
- History
- Physical Education
- Psychology
- Religion
- Social Science
- Sociology

Course Descriptions

In the following list of courses, the credit value in semester units is indicated following the course number.

Courses numbered 100 or above are applicable to the associate degrees. Courses numbered below 100 are developmental in nature. The student is urged to consult his or her counselor or specific college catalogs for information regarding transferability of courses to four year institutions.

Course prerequisites may only be waived by the appropriate division chairman.

All courses listed in this catalog may not be offered during the academic year.

Air Conditioning/ Refrigeration

Air Conditioning 703 (See Cooperative Work Experience) **3 Cr.**

Air Conditioning 704 (See Cooperative Work Experience) **4 Cr.**

Air Conditioning 713 (See Cooperative Work Experience) **3 Cr.**

Air Conditioning 714 (See Cooperative Work Experience) **4 Cr.**

Air Conditioning 803 (See Cooperative Work Experience) **3 Cr.**

Air Conditioning 804 (See Cooperative Work Experience) **4 Cr.**

Air Conditioning 813 (See Cooperative Work Experience) **3 Cr.**

Air Conditioning 814 (See Cooperative Work Experience) **4 Cr.**

AC 150 Basic Principles of Electricity **3 Cr., 90 Contact Hrs.**
A study of the principles of electricity as applied in simple circuits and circuit components including basic electrical units and test instruments. (A comprehensive course that includes AC 151, 152, and 153. The student may register in the comprehensive course — AC 150 — or any of the inclusive courses — AC 151, 152, 153.) Laboratory fee required.

AC 151 Basic Electrical Units **1 Cr., 30 Contact Hrs.**
Calculating and measuring volts, ohms, amperes and watts. Laboratory fee required.

AC 152 Simple Circuits **1 Cr., 30 Contact Hrs.**
Interpretation of simple schematic diagrams and construction of series, parallel and combination circuits and resistive loads. Laboratory fee required.

AC 153 Circuit Components **1 Cr., 30 Contact Hrs.**
Construction of circuits using switches, relays, solenoids, basic control and protective devices.

AC 155 Advanced Electrical Circuits **3 Cr., 90 Contact Hrs.**
Applications of basic electrical principles in the construction and diagnosis of complex electrical circuits and alternating current motors commonly used in the air-conditioning and refrigeration industry. (A comprehensive course that includes AC 156 and 157. The student may register in the comprehensive course — AC 155 — or either of the inclusive courses — AC 156, 157.) Laboratory fee required.

AC 156 Complex Circuits **2 Cr., 60 Contact Hrs.**
Construction and interpretation of complex schematics; construction and diagnosis of complex electrical circuits with resistive, inductive and capacitive loads. Laboratory fee required.

AC 157 A. C. Motor Fundamentals **1 Cr., 30 Contact Hrs.**
Magnetic principles as applied in AC motors. Wiring, diagnosis, and service of AC motors; starting and protective devices commonly used in the air-conditioning industry.

AC 160 Basic Principles of Refrigeration **3 Cr., 90 Contact Hrs.**
A study of the principles of physics including thermodynamics, gas laws, and heat transfer as applied to refrigeration systems; includes a study of air and refrigerant properties. (A comprehensive course that includes AC 161, 162, and 163. The student may register in the comprehensive course — AC 160 — or any of the inclusive courses — AC 161, 162, 163.) Laboratory fee required.

AC 161 Elementary Physics and Thermodynamics **1 Cr., 30 Contact Hrs.**
Principles of thermodynamics, physics, and gas law as applied to basic refrigeration systems. Laboratory fee required.

AC 162 Heat Transfer and Air Properties **1 Cr., 30 Contact Hrs.**
Principles of heat flow and heat transfer; simple load calculations, air properties, and basic psychrometric chart construction.

AC 163 Refrigerant Properties **1 Cr., 30 Contact Hrs.**
Identification of refrigerant types commonly used in air-conditioning and refrigeration; comparison of basic refrigerant properties and construction of the pressure-enthalpy diagram.

AC 165 Vapor Compression Systems **3 Cr., 90 Contact Hrs.**
The major components of vapor compression systems, their function, and relationship; the four processes of the vapor compression system; system service including evacuation and charging.

AC 170 Pipefitting Procedures **3 Cr., 90 Contact Hrs.**
Accepted piping practices and pipe size selection; soldering, silver-soldering, and silver-brazing techniques; leak detection, and repair methods. (A comprehensive course that includes AC 171 and 172. The student may register in the comprehensive course — AC 170 — or either of the inclusive courses — AC 171, 172.) Laboratory fee required.

AC 171 Piping and Fittings **2 Cr., 60 Contact Hrs.**
Identify and apply accepted piping practices; select the correct pipe size for the application; identify and select the correct fittings; construction of piping circuits using proper soft-solder, silver-solder, and silver-brazing techniques. Laboratory fee required.

AC 172 Leak Detection and Repair **1 Cr., 30 Contact Hrs.**
Locate and repair refrigeration system leaks using the correct repair methods and materials. Laboratory fee required.

AC 175 Residential Load Calculations **3 Cr., 90 Contact Hrs.**
Calculate residential heating and cooling loads including air properties, psychrometric chart construction and interpretation. (A comprehensive course that includes AC 176, 177, and 178. The student may register in the comprehensive course — AC 175 — or any of the inclusive courses — AC 176, 177, 178.) Laboratory fee required.

AC 176 Cooling Load Calculations Residential **1 Cr., 30 Contact Hrs.**
Identify heat sources, calculate heat transfer coefficients and the cooling load on the system with emphasis on energy conservation. Laboratory fee required.

AC 177 Heating Load Calculations — Residential **1 Cr., 30 Contact Hrs.**
Identify sources of heat loss, calculate heat transfer coefficients and the heating load on the system with emphasis on energy conservation. Laboratory fee required.

AC 178 Air Properties — Residential **1 Cr., 30 Contact Hrs.**
Measurement of residential air properties; plot and interpret psychrometric charts; identify methods of humidity control. Laboratory fee required.

AC 180 Residential Cooling Systems **3 Cr., 90 Contact Hrs.**
Principles of refrigeration as applied to residential cooling systems with emphasis on compressors, condensers, evaporators, and metering devices; cooling system electrical components, their function and relationship; the reverse cycle system (heat pump) as a summer/winter air-conditioning system. (A comprehensive course that includes AC 181, 182, and 183. The student may register in the comprehensive course — AC 180 — or any of the inclusive courses — AC 181, 182, 183.) Laboratory fee required.

AC 181 Refrigeration Systems — Residential **1 Cr., 30 Contact Hrs.**
Types of cooling systems and major components including compressors, evaporators, condensers, and metering devices; applications of accepted piping practices. Laboratory fee required.

AC 182 Electricial Systems — Residential Cooling **1 Cr., 30 Contact Hrs.**
The components of the electrical system including electrical control devices, protective devices and AC motors. Laboratory fee required.

AC 183 Reverse Cycle Systems **1 Cr., 30 Contact Hrs.**
A study of the residential heat pump and its use in summer/winter air-conditioning including the electrical and mechanical system. Laboratory fee required.

AC 185 Residential Heating Systems **3 Cr., 90 Contact Hrs.**
Principles and procedures used in residential heating systems with emphasis on the gas and electrical warm-air furnace; the mechanical and electrical components of the heating systems. (A comprehensive course that includes AC 186, 187, and 188. The student may register in the comprehensive courses — AC 185 — or any of the inclusive courses — AC 186, 187, and 188.) Laboratory fee required.

AC 186 Warm-Air Furnace — Gas **1 Cr., 30 Contact Hrs.**
Diagnose and service heat exchangers, burner assemblies and gas valves; a study of the combustion process, vent systems and safety procedures. Laboratory fee required.

AC 187 Warm-Air Furnace — Electric **1 Cr., 30 Contact Hrs.**
Principles and practices of resistance heating, the components of the system, and their relationship. Laboratory fee required.

AC 188 Electrical Systems — Heating **1 Cr., 30 Contact Hrs.**
Identify and diagnose individual components of the electrical system; the relationship of the components to the system. Laboratory fee required.

AC 190 Commercial Refrigeration Systems **3 Cr., 90 Contact Hrs.**
A study of commercial refrigeration applications and methods common to the industry; system components including flow-control and pressure control devices; defrost systems and humidity control. (A comprehensive course that includes AC 191, 192, and 193. The student may register in the comprehensive course — AC 190 — or in any of the inclusive courses — AC 191, 192, and 193.) Laboratory fee required.

AC 191 Introduction to Commercial Refrigeration Systems **1 Cr., 30 Contact Hrs.**
A study of commercial refrigeration applications and methods with emphasis on those common to light commercial fixtures. Laboratory fee required.

AC 192 System Components — Commercial Refrigeration **1 Cr., 30 Contact Hrs.**
Major components of commercial systems including compressors, flow control and pressure control devices; relationships of the components to the total system. Laboratory fee required.

AC 193 Defrost Systems and Humidity Control **1 Cr., 30 Contact Hrs.**
Diagnosing, service, repair and/or replace components of defrost systems; air properties and humidity control. Laboratory fee required.

AC 195 Commercial Refrigeration Systems Service **3 Cr., 90 Contact Hrs.**
Principles and practices for fixture installations including pipe-fitting procedures; leak detection and repair; evacuation and system charging for peak performance; system lubrication at low temperatures; diagnose and service electrical system components. (A comprehensive course that includes AC 196, 197, and 198. The student may register in the comprehensive course — AC 195 — or in the inclusive courses — AC 196, 197, and 198.) Laboratory fee required.

AC 196 Installation Procedures — Commercial Refrigeration **1 Cr., 30 Contact Hrs.**
Principles and practices for fixture installation; pipe-fitting procedures with emphasis on oil return. Laboratory fee required.

AC 197 System Service and Repair — Commercial Refrigeration **1 Cr., 30 Contact Hrs.**
Locate and repair system leaks; system evacuation and the refrigerant charge for peak performance; diagnose and service system components including compressors, evaporators, condensers, metering devices, and defrost mechanisms. Laboratory fee required.

AC 198 Electrical Systems Service — Commercial Refrigeration **1 Cr., 30 Contact Hrs.**
Diagnose, service, repair and/or replace components of the electrical systems commonly used in commercial refrigeration. Laboratory fee required.

AC 240 Air Distribution System — Residential **3 Cr., 90 Contact Hrs.**
Identify principles and practices of acceptable air distribution systems including flow patterns, velocity, volume, and stratification for heating and cooling applications; filter service, electronic air cleaners and humidifiers. (A comprehensive course that includes AC 241, 242, and 243. The student may register in the comprehensive course — AC 240 — or any of the inclusive courses — AC 241, 242, and 243). Laboratory fee required.

AC 241 Air Distribution — Cooling **1 Cr., 30 Contact Hrs.**
Principles of air flow, velocity, volume, and flow patterns for residential cooling; methods of air distribution and system balance for best peformance. Laboratory fee required.

AC 242 Air Distribution — Heating **1 Cr., 30 Contact Hrs.**
Principles of air flow, velocity, volume, and flow patterns for residential heating; methods of air distribution and system balance for best performance. Laboratory fee required.

AC 243 Electronic Air Cleaners and Humidifiers **1 Cr., 30 Contact Hrs.**
Principles of electronic air cleaners and humidifiers; their use in environmental conditioning; service and adjustment of air cleaners and humidifiers. Laboratory fee required.

AC 245 Residential Systems Service **3 Cr., 90 Contact Hrs.**
Diagnose, service, adjust, repair, and/or replace residential air-conditioning system components; installation procedures for residential air-conditioning systems. (A comprehensive course that includes

AC 246 and 247. The student may register in the comprehensive course — AC 245 — or either of the inclusive courses — AC 246, 247.) Laboratory fee required.

AC 246 Systems Service and Repair — Residential **2 Cr., 60 Contact Hrs.**
Diagnose, service, repair, and/or replace air-conditioning system components; leak detection and repair; evalation and charging procedures; adjust systems for peak performance. Laboratory fee required.

AC 247 Installation Procedures — Residential **1 Cr., 30 Contact Hrs.**
Identify and develop skills required for installing air-conditioning system using correct techniques; includes applications of correct piping principles. Laboratory fee required.

AC 250 Air-Conditioning Equipment Selection **3 Cr., 90 Contact Hrs.**
Calculate residential cooling and heating loads using approved forms; select the air-conditioning equipment required for the calculated loads. (A comprehensive course that includes AC 251 and 252. The student may register in the comprehensive course — AC 250 — or in either of the inclusive courses — AC 251, 252.) Laboratory fee required.

AC 251 Advanced Load Calculations **2 Cr., 60 Contact Hrs.**
Calculate residential cooling and heating loads using the approved forms. Laboratory fee required.

AC 252 Process Equipment Selection **1 Cr., 30 Contact Hrs.**
Select the condensing unit, evaporator coil, and warm-air furnace (or heat pump) as indicated by the calculated residential air-conditioning loads with an emphasis on energy conservation. Laboratory fee required.

AC 255 Air Distribution Systems Design **3 Cr., 90 Contact Hrs.**
Advanced psychrometrics used in custom system design; custom design of air distribution systems, indicated by the particular need of the structure including duct design, diffuser selection and air-flow patterns. (A comprehensive course that includes AC 256 and 257. The student may register in the comprehensive course — AC 255 — or either of the inclusive courses — AC 256, and 257.) Laboratory fee required.

AC 256 Advanced Psychrometrics — Residential **1 Cr., 30 Contact Hrs.**
A use of the psychrometric chart in air mixtures problems, apparatus dew point and by-pass factor selection, leaving air properties and determining actual system performance. Laboratory fee required.

AC 257 Air Distribution Equipment Selection **2 Cr., 60 Contact Hrs.**
Selection of air distribution duct systems, diffusers and air-flow patterns for the structure as indicated by calculated heating and cooling loads; emphasis on energy conservation. Laboratory fee required.

AC 260 Special Commercial Refrigeration Applications **3 Cr., 90 Contact Hrs.**
Commercial Refrigeration principles as applied to ice makers (flakers and cubers), beverages coolers and special display cases. (A comprehensive course that includes AC 261, 262, and 263. The student may register in the comprehensive course — AC 260 — or in any of the inclusive courses — AC 261, 262, and 263.) Laboratory fee required.

AC 261 Ice Makers — Flakers **1 Cr., 30 Contact Hrs.**
Diagnose, service, repair and/or replace components of ice makers (flakers) with emphasis on the mechanical and control systems. Laboratory fee required.

AC 262 Ice Makers— Cubers **1 Cr., 30 Contact Hrs.**
Diagnose, service, repair and/or replace components of ice makers (cubers) with emphasis on harvest methods and control systems. Laboratory fee required.

AC 263 Beverage Coolers and Special Display Cases **1 Cr., 30 Contact Hrs.**
Diagnose and service beverage coolers, water fountains, dairy cases and special display cases that require close temperature and/or humidity ranges. Laboratory fee required.

AC 265 Advanced Commercial Refrigeration Systems **3 Cr., 90 Contact Hrs.**
Multiple Compressors, evaporators, condensers, and metering devices; their function and relationship to the total system. Calculate and analyze product and structural loads. (A comprehensive course that includes AC 266 and 267. The student may register in the comprehensive course — AC 265 — or in either of the inclusive courses — AC 266 and 267.) Laboratory fee required.

AC 266 Multiple Systems **1 Cr., 30 Contact Hrs.**
Diagnose, service, repair and/or replace components of the multiple compressor, evaporator, condenser, metering device system with emphasis on control systems. Laboratory fee required.

AC 267 Product and Structural Load Analysis **2 Cr., 60 Contact Hrs.**
Calculate and analyze product and structural loads; the relationship of these loads to the total environmental system. Laboratory fee required.

AC 270 Industrial Air-Conditioning Systems **3 Cr., 90 Contact Hrs.**
Principles and operation of water-cooled condensing systems, water-treatment water towers and piping; centrifugal and reciprocating compression systems; absorption system principles as applied to industrial air-conditioning. (A comprehensive course that includes AC 271, 272, and 273. The student may register in the comprehensive course — AC 270 — or in any of the inclusive courses — AC 271, 272, and 273.) Laboratory fee required.

AC 271 Water-Cooled Condensing System **1 Cr., 30 Contact Hrs.**
Pipe-sizing, piping practices and principles of water-cooled condensing systems, water towers, and water treatment. Laboratory fee required.

AC 272 Centrifugal and Reciprocating Compressor Systems **1 Cr., 30 Contact Hrs.**
Principles and operation of centrifugal and large reciprocating compressor systems with emphasis on the compressor components. Laboratory fee required.

AC 273 Principles of Absorption Systems **1 Cr., 30 Contact Hrs.**
Identify components and operational theory of absorption systems; advantages and disadvantages of industrial absorption systems. Laboratory fee required.

AC 275 Industrial Air-Conditioning Service **3 Cr., 90 Contact Hrs.**
Service, repair and/or replace capacity control systems and lubrication systems; refrigerant circuit piping principles and practices, leak detection and repair; evacuation and system charging for best performance; preventative maintenance and schedules. (A comprehensive course that includes AC 276, 277, and 278. The student may register in the comprehensive course — AC 275 — or any of the inclusive courses — AC 276, 277, and 278.) Laboratory fee required.

AC 276 Capacity Control and Lubrication Systems **1 Cr., 30 Contact Hrs.**
Adjust, service, repair and/or replace components of capacity control systems; lubrication systems and oil pressure control devices. Laboratory fee required.

AC 277 Refrigerant Circuit Service **1 Cr., 30 Contact Hrs.**
Leak detection and repairs, evacuation, and charging procedures for best system performance; refrigerant circuit piping principles and practices. Laboratory fee required.

AC 278 Preventative Maintenance Procedures **1 Cr., 30 Contact Hrs.**
System components requiring preventative maintenance; preparation of preventative maintenance schedules. Laboratory fee required.

AC 280 Hydronic Systems **3 Cr., 90 Contact Hrs.**
Air-conditioning systems using water as a secondary medium of heat transfer; water chiller, and low-pressure boiler systems. (A comprehensive course that includes AC 281 and 282. The student may register in the comprehensive course — AC 280 — or in either of the inclusive courses — AC 281, and 282.) Laboratory fee required.

AC 281 Water Chillers **1 Cr., 30 Contact Hrs.**
Principles of operation and service on systems using water chillers as a secondary refrigerant including control and protective devices. Laboratory fee required.

AC 282 Low-Pressure Boilers **2 Cr., 60 Contact Hrs.**
The combustion process, burner assemblies, fuel circuit devices, heat exchanger control and protection devices including the electrical system. Laboratory fee required.

AC 285 Advanced Industrial Air-Conditioning Systems **3 Cr., 90 Contact Hrs.**
Applied Psychrometrics in air mixtures, coil by-pass factors, evaporator coil dew point, total system load; multi-zone systems; air distribution systems and air balancing. (A comprehensive course that includes AC 286, 287, and 288. The student may register in the comprehensive course — AC 285 — or in any of the inclusive courses — AC 286, 287, and 288.) Laboratory fee required.

AC 286 Advanced Psychrometrics — Industrial Air-Conditioning **1 Cr., 30 Contact Hrs.**
Use of the psychrometric chart and air-measuring instruments in air mixtures, evaporator coil performance, calculating total system load and balancing system components. Laboratory fee required.

AC 287 Multi-Zone Systems **1 Cr., 30 Contact Hrs.**
Components of the multi-zone system, operational and diagnostic procedures, balancing system performance. Laboratory fee required.

AC 288 Air Distribution Systems and Air Balancing **1 Cr., 30 Contact Hrs.**
Principles of industrial air-conditioning distribution systems, flow patterns, face and by-pass dampers; air balancing for total system performance. Laboratory fee required.

AC 290 Industrial Air-Conditioning Control Systems **3 Cr., 90 Contact Hrs.**
Diagnose, service, repair and/or replace components of electrical, pneumatic, and electronic control systems with emphasis on control system principles. Laboratory fee required.

Anthropology

ANT 100 Introduction to Anthropology **3 Cr., 3 Lec.**
A survey of the origin of mankind involving the processes of physical and cultural evolution, ancient man, preliterate man today. Attention is centered on fossil evidence, physiology and family/group roles and status.

ANT 101 Cultural Anthropology **3 Cr., 3 Lec.**
A survey of the cultures of the world with emphasis on those of North America. The concept of culture, social and political organization, language, religion and magic, elementary anthropological theory. (This course is offered on campus and may be offered via television.)

ART 103 Introduction to Art **1 Cr., 3 Lab.**
An introduction to materials and techniques of studio art for the non-major, involving basic design concepts and traditional media. Laboratory fee required.

ART 104 Art Appreciation **3 Cr., 3 Lec.**
Films, lectures, slides and discussions on the theoretical, cultural and historical aspects of the visual arts. Attempts to develop visual and aesthetic awareness, thus relating art to the student as an individual.

ART 105 Survey of Art History **3 Cr., 3 Lec.**
This course covers the chronological sequence of art from the prehistoric through the renaissance. Explores the cultural, geophysical and personal influences on art styles, offering the student a broader range of ideas which will enable him to relate the past to his own work and provide stimuli for his future works.

ART 106 Survey of Art History **3 Cr., 3 Lec.**
This course covers the chronological sequence of art from the baroque through the present. Explores the cultural, geophysical and personal influences on art styles, offering the student a broader range of ideas which will enable him to relate the past to his own work and provide stimuli for his future works.

ART 110 Design I **3 Cr., 2 Lec., 4 Lab.**
A study of basic concepts of design using two-dimensional materials. Use of line, color, illusion of space or mass, texture, value, shape and size in composition. Required of all art and interior design majors. Open to all interested students.

ART 111 Design II **3 Cr., 2 Lec., 4 Lab.**
A study of basic concepts of design with three-dimensional materials, using mass, space, movement and texture. Required of all art majors. Open to all interested students. Laboratory fee required.

ART 114 Drawing I **3 Cr., 2 Lec., 4 Lab.**
A beginning course investigating a variety of media, techniques and subjects which explores perceptual and descriptive possibilities with consideration of drawing as a developmental process as well as an end in itself. Required of all art majors. Open to others who are interested.

ART 115 Drawing II **3 Cr., 2 Lec., 4 Lab.**
Prerequisite: Art 114. Expansion of Drawing I stressing the expressive and conceptual aspects of drawing including the human figure within a spatial environment. Required of all art majors. Open to others who are interested.

ART 116 Introduction to Jewelry I **3 Cr., 2 Lec., 4 Lab.**
Prerequisites: Art 110, ART 111, or permission of instructor. The basic techniques of fabrication and casting of metals, with emphasis on original design. Laboratory fee required.

ART 117 Introduction to Jewelry II **3 Cr., 2 Lec., 4 Lab.**
Prerequisite: ART 116. A continuation of Jewelry I. The study of advanced fabrication and casting techniques, with emphasis on original design. Laboratory fee required.

ART 118 Creative Photography for the Artist I **3 Cr., 2 Lec., 4 Lab.**
Prerequisites: ART 110, ART 114 or consent of the instructor. Creative use of the camera and photosensitive materials as a means of making

expressive graphic images. Emphasis will be upon black and white processing and printing techniques. Laboratory fee required.

ART 119 Creative Photography for the Artist II **3 Cr., 2 Lec., 4 Lab.**
Prerequisites: ART 118 or consent of the instructor. A continuation of ART 118 with emphasis upon color processing and printing techniques. Laboratory fee required.

ART 199 Art Seminar **1 Cr., 1 Lec.**
A one hour weekly lecture and seminar where area artists, critics and art educators speak with students about the work exhibited in the gallery and discuss current art styles and movements, as well as the specifics of being artists in our contemporary society.

ART 201 Drawing III **3 Cr., 2 Lec., 4 Lab.**
Prerequisites: ART 110, ART 111, ART 115, Sophomore standing and/or permission of the division chairman. Analytic and expressive drawing of the human figure, stressing study of movement and volume. Laboratory fee required.

ART 202 Drawing IV **3 Cr., 2 Lec., 4 Lab.**
Prerequisites: ART 201, Sophomore standing and/or permission of the division chairperson. A continuation of ART 201 with emphasis on individual expression. Laboratory fee required.

ART 203 Art History **3 Cr., 3 Lec.**
Prerequisites: ART 105 and ART 106. A chronological study of the development of the art of western man during the Renaissance period. Emphasis on development of Renaissance art in northern and southern Europe.

ART 204 Art History **3 Cr., 3 Lec.**
Prerequisites: ART 105 and ART 106. A chronological study of the development of the art of western man from late 19th century through today. Emphasis on development of modern art in Europe and America.

ART 205 Painting I **3 Cr., 2 Lec., 4 Lab.**
Prerequisites: ART 110, ART 111, ART 115 or permission of the instructor. A studio course stressing fundamental concepts of painting with acrylics and/or oils. Emphasis on painting from still life, models and the imagination.

ART 206 Painting II **3 Cr., 2 Lec., 4 Lab.**
Prerequisite: ART 205. Continuation of ART 205 with emphasis on individual expression.

ART 208 Sculpture I **3 Cr., 2 Lec., 4 Lab.**
Prerequisites: ART 110, ART 111, ART 115 or permission of the instructor. An exploration of various sculptural approaches in a variety of media and using different techniques. Laboratory fee required.

ART 209 Sculpture II **3 Cr., 2 Lec., 4 Lab.**
Prerequisite: ART 208. A continuation of Sculpture I with emphasis on individual expression. Laboratory fee required.

ART 210 Commercial Art I **3 Cr., 2 Lec., 4 Lab.**
Prerequisites: ART 110, ART 111, ART 115 or consent of the instructor. An introduction to the working world of commercial art with emphasis on the acquisition of professional attitudes and basic studio skills through the working out of typical commercial assignments. Laboratory fee required.

ART 211 Commercial Art II **3 Cr., 2 Lec., 4 Lab.**
Prerequisite: ART 210. A continuation of ART 210 with added emphasis on layout and design concepts through increased individual assignments, work with simple art for reproduction techniques and the development of a professional portfolio. Laboratory fee required.

ART 212 Advertising Illustration **3 Cr., 2 Lec., 4 Lab.**
Prerequisite: ART 210. Problems of the illustrator are investigated while exploring the elements he uses. Projects involving basic solution to contemporary illustration are developed.

ART 215 Ceramics I **3 Cr., 2 Lec., 4 Lab.**
Prerequisites: ART 110, ART 111, ART 115 or permission of instructor. Building of pottery forms by coil, slab and use of wheel; glazing and firing. Laboratory fee required.

ART 216 Ceramics II **3 Cr., 2 Lec., 4 Lab.**
Prerequisite: ART 215 or permission of instructor. A study of glaze technology and advanced problems in the creation of sculptural and utilitarian ceramic ware. Laboratory fee required.

ART 228 Three Dimensional Design **3 Cr., 2 Lec., 4 Lab.**
Prerequisites: Art majors — ART 110, ART 111 and ART 114. Drafting Technology majors — Drafting 183 and Engineering 186. Development of three-dimensional projects in metal, plastic, and wood through the stages of design: Idea, sketches, research, working drawing, model and finished product. Emphasis is on function, material and aesthetic form. Laboratory fee required.

Astronomy

AST 100 Descriptive Astronomy **3 Cr., 3 Lec.**
A descriptive course consisting of a survey of the fundamentals of astronomy. Emphasis on the solar system, including a study of the celestial sphere, the earth's motions, the moon, planets, asteroids, comets, meteors and meteorites. (This course is offered on campus and may be offered via television.)

AST 102 General Astronomy **3 Cr., 3 Lec.**
A course emphasizing stellar astronomy which includes a study of the sun, the properties of stars, star clusters, nebulae, interstellar gas and dust, the milky way galaxy and external galaxies.

AST 103 Astronomy Laboratory I **1 Cr., 3 Lab.**
Prerequisites: Successful completion of or concurrent enrollment in Astronomy 101. Astronomy Laboratory I gives the student an opportunity to make elementary astronomical observations, using simple equipment, of the motions of celestial objects. Also covered will be elementary navigational techniques, graphical techniques of calculating the position of a planet or comet, and construction of simple observing equipment. This course includes night observations. Laboratory fee required.

AST 104 Astronomy Laboratory II **1 Cr., 3 Lab.**
Prerequisite: Successful completion of or concurrent enrollment in Astronomy 102. Astronomy Laboratory II gives the student an opportunity to make and use elementary astronomical observations. Topics covered include timekeeping, the various uses of spectra, and the motions of stars and galaxies. This laboratory includes night observations. Laboratory fee required.

Aviation Technology

AVT 121 Ground School Private **3 Cr., 3 Lec.**
Basic study of federal aviation regulations, flight dynamics, meteorology, navigation, use of radio and general service of aircraft. Course is designed to fulfill the ground school requirements of the FAA private pilot certificate.

AVT 123 Ground School Commercial **3 Cr., 3 Lec.**
Prerequisite: Private pilot certificate. In-depth analysis of all topics covered in the commercial pilot written examination. Emphasis is placed on problem development and solution practices to enhance appropriate responses in practical situations. Advanced exercises in the areas of aircraft operation, meteorology, navigation, communications, theory and hazards of attitude instrument flight, flight physiology, emergency procedures. Far's and aim, flight planning. Satisfactory completion of this course should qualify the student to pass the commercial pilot written examination.

AVT 224 Ground School Instrument **3 Cr., 3 Lec.**
Prerequisite: Private or commercial pilot certificate. Includes 48 hours covering theory and principles of aircraft attitude control, flight procedures and maneuvering by reference solely to cockpit instruments. Prepares the student for the FAA written examination for the instrument rating. Satisfactory completion of this course should qualify the student to pass the instrument rating written examination.

Banking and Finance

BF 101 Credit Management **3 Cr., 3 Lec.**
Prerequisite: Credit and collection principles. Working methods of credit management and control are developed and applied to cases that involve making credit decisions, fixing credit limits, handling complicated accounts, adjustments, extensions, composition settlements, assignments, reorganizations and bankruptcies. Stress is laid upon credit and financial analysis relating to profitability, capacity to pay debts and provide essential services, and ability to withstand adversity. Trade credit is examined as a commitment of corporate assets.

BF 103 Introduction to Banking **3 Cr., 3 Lec.**
This course presents broad basic fundamentals of bank functions in a descriptive fashion so that the student may acquire an operational perspective of banking services offered.

BF 104 Money and Banking **3 Cr., 3 Lec.**
This course presents the basic economic principles most closely related to the subject of money and banking. The course stresses the practical application of the economics of money and banking to the financial institution. Some of the subjects covered include structure of the commercial banking system; the nature and functions of money; bank investments, loans, earnings and capital; the Federal Reserve System and its policies and operations; Treasury Department Operations; and the changing International Monetary System.

BF 105 Comparative Financial Institutions **3 Cr., 3 Lec.**
The nature, functions and relationships of financial institutions, money markets and capital markets. An investigation of the role, characteristics and operations of banking, savings and loan and financial credit institutions, their similarities, differences, capabilities, customer orientation and effect of state and federal regulatory agencies on operations.

BF 106 Introduction to the Savings Association Business **2 Cr., 2 Lec.**
This survey course introduces students to the modern business world and to the role of savings associations. Savings associations' historical development, present-day organization, competition and future direction are presented and students acquire a solid foundation for more specialized courses of study.

BF 107 Savings Association Operations **2 Cr., 2 Lec.**
An overview of the internal operations of a savings association, this course surveys the work done throughout the institution, outlines the responsibilities of various departments, and illustrates the interrelationship of all job assignments.

BF 110 Federal Reserve System **3 Cr., 3 Lec.**
This course examines the operations and policies of the Federal Reserve System. Attention is given to international monetary affairs, especially the changing role of gold, economic developments and goals which affect the stability of the American economy, and Federal Reserve efforts to adapt and influence the changing economic environment.

BF 111 Trust Functions and Services **3 Cr., 3 Lec.**
This course presents a complete picture of the services rendered by institutions engaged in trust business. Topics covered are the history

of trust services and institutions, trust powers and government supervision, trust department services, property, wills, settlement of estates, personal and insurance trusts, personal agencies, guardianship, employee benefits trusts, corporate trusts and agencies, investment of trust funds, and management of property and mortgages.

BF 112 Installment Credit **3 Cr., 3 Lec.**
This course emphasizes the details of installment credit. Topics covered are principles of credit evaluation, open-end credit, marketing bank services, collection policies and procedures, legal aspects, financial statement analysis, direct and indirect installment lending, leasing and other special situations, installment credit department management, insurance, and rate structure and yields.

BF 113 Credit Card Banking **3 Cr., 3 Lec.**
This course is designed to assist students in understanding the overall aspect of operating a bank charge plan. It briefly touches on marketing of credit cards.

BF 114 Teller Training **3 Cr., 2 Lec., 1 Lab.**
An intensive concentrated course of study and practical hands-on experience designed to train tellers in the basics of teller operations. Topics covered include: Fundamentals of negotiable instruments, introduction to the care and handling of money, deposits, check and savings transactions, special teller functions and balancing, cashing and paying checks. The importance of public relations in the teller's job, security measures, fraud and robbery are also covered.

BF 115 Credit and Collection Principles **3 Cr., 3 Lec.**
This is a basic course in credit and collections. The topics studied include the nature and function of credit, types and classification of credit, principles of bank and commercial credit, factors of credit risk, sources of information, analysis of agency reports, interchange services, and collection procedures.

BF 116 Construction Lending **1 Cr., 1 Lec.**
The course provides a broad overview of construction lending in commercial banks and covers such topics as analysis of applications, permanent financing, construction loan participations and servicing; commitment procedures, bonding and developer guarantees, advances, inspections, legal work, unsecured construction financing, land and development loans, and bank relationships with mortgage bankers.

BF 117 Letters of Credit **2 Cr., 2 Lec.**
The subjects covered include shipping documents, mechanics of letters of credit, payment and reimbursement, and document examination.

BF 118 Installment Loan Interviewer **1 Cr., 1 Lec.**
This course will introduce the student to proper techniques to use when interviewing a loan customer. Topics covered include reg B requirements and how to handle "problem" customers. Role playing will be used.

BF 119 New Accounts **1 Cr., 1 Lec.**
A survey of basic problems working with new bank accounts. It describes how the new account function interrelates with marketing and covers such legal questions as: who can open an account; what documents are necessary to open an account; does federal law require social security number or tax identification number; the legal rights of survivorship upon the death of one of the signers.

BF 120 Selling Bank Services **1 Cr., 1 Lec.**
This seminar teaches how to recognize and meet bank customers' needs — checking accounts, savings accounts, savings services, loans to individuals, safe deposit, travelers checks, and cross-selling. Extensive use of role play and programmed instruction.

BF 121 Loss Prevention **1 Cr., 1 Lec.**
This seminar focuses on check examination and cashing, check swindles, identification with and without credentials, bank holdups, and security procedures.

BF 122 Safe Deposit **1 Cr., 1 Lec.**
This seminar is for persons interested in safe deposit operations and who want to become more effective on the job. Safe deposit security legal concerns, access, insurance, contracts, powers of attorney, customer relations, recordkeeping, and safekeeping procedures are some of the topics discussed.

BF 123 Loan and Discount **1 Cr., 1 Lec.**
This seminar teaches the essential facts about promissory notes, including calculating interest and discounting commercial paper; guarantees; general collateral agreements; examining and processing documents accompanying notes secured by stocks, bonds, and savings accounts passbooks; and the concepts of attachment, perfection, priority, default, and foreclosure. The seminar uses programmed instruction and several simulation exercises.

BF 124 Stocks and Bonds **1 Cr., 1 Lec.**
Among the topics covered are what stocks and bonds are and how they function; how to transfer ownership; the classes and kinds of stocks, bonds, and government securities.

BF 125 Savings Association Lending **3 Cr., 3 Lec.**
This course introduces students to lending operations of savings associations and concentrates on procedures for handling conventional one-to-four family mortgage loans, home improvement loans and mobile home loans. Specialized areas of savings association lending, including large scale mortgage loans, the role of government in home financing, the management of real estate owned, and whole loan sales and participations are also studied.

BF 201 Advanced Credit Analysis **3 Cr., 3 Lec.**
Prerequisite: Credit and collection principles. The techniques of credit decision-making are studied in detail. The methods of financial analysis, such as ratio calculation, cash flow determination and comparative analysis, are discussed and applied, through case method, to the solution of business problems. Risk appraisal is also studied in the light of general economic conditions, the natures of particular businesses, and the conditions and trends in various industries.

BF 202 Credit Law **3 Cr., 3 Lec.**
Specific legalities regarding credit and the granting of credit with particular emphasis on credit regulation and state of Texas commercial and consumer laws.

BF 203 Public Relations and Marketing of Financial Services **3 Cr., 3 Lec.**
This course is designed to present the student with a practical working knowledge of the role and importance of public relations to the finance industry, both collectively and as applied to individual institutions, e.g., commercial banks, savings and loan associations, credit unions and other financial organizations. Emphasis is also placed on the promotion and marketing of financial services and evaluation of comparative marketing tactics and strategies.

BF 204 Federal Regulations of Banking **3 Cr., 3 Lec.**
Some of the topics covered are agencies regulating banks, bank charters, bank reports and examinations, federal limitations on banking operations, and the regulation of bank expansion. Emphasis is on supervision rather than the role of the federal government as it indirectly influences the operations of banks through fiscal and monetary policy decisions.

BF 205 Analyzing Financial Statements **3 Cr., 3 Lec.**
Prerequisite: Business 201. This course includes characteristics of financial statements and financial statement analysis. Goals, methods, and tools of analysis; analysis of profit and loss, accounts receivable, inventories, and balance sheets; the relationship of balance sheet accounts to sales; and projected statements cash budgets.

BF 206 Negotiable Instruments and the Payments Mechanism **3 Cr., 3 Lec.**
The aim is to improve understanding of how the law operates within the framework of federal and state banking statutes, court decisions, and administrative regulations. Legal situations that occur in the deposit, collection, dishonor and return, payment of checks and other cash items, and the relationship of the various parties in bank collection channels are explored, as are relationships between a bank and its depositor and some of the legal aspects of other bank service operations.

BF 207 Savings Account Administration **2 Cr., 2 Lec.**
This course describes the insuring agency, the insurance contract and insurance coverage of savings accounts; explains procedures involved in opening savings accounts; defines problem areas and routine procedures for handling inactive or dormant accounts, loans secured by savings accounts, and creditor actions in reaching debtors' accounts; describes the relationships of liquidity levels and savings withdrawals as used by association financial managers; defines association terms appropriate for advertising of savings accounts and describes additional services to savers.

Biology

BIO 101 General Biology **4 Cr., 3 Lec., 3 Lab.**
This course is a prerequisite for all higher level biology courses and should be taken in sequence. Recommended for science majors. Emphasis is structure and function at the cell, tissue and organ system levels of organization in both plants and animals. Laboratory fee required.

BIO 102 General Biology **4 Cr., 3 Lec., 3 Lab.**
This course is a continuation of Biology 101. Emphasis is mendelian and molecular genetics, evolutionary mechanisms, plant and animal development and the energetics and regulation of ecological communities. Laboratory fee required.

BIO 115 Biological Science **4 Cr., 3 Lec., 3 Lab.**
A presentation of selected topics in biological science for the non-science major including the cell concept, basic chemistry as it relates to biology, an introduction to genetics, cellular processes such as mitosis, meiosis, respiration, photosynthesis and plant and animal reproduction. Laboratory fee required. [This course is offered on campus and may be offered via television.]

BIO 116 Biological Science **4 Cr., 3 Lec., 3 Lab.**
No prerequisite. A study of selected topics of biological science for the non-science major including all systems of the human body, disease, drug abuse and aging, evolution, ecology and man in relation to his environment. Laboratory fee required.

BIO 120 Introduction to Human Anatomy and Physiology **4 Cr., 3 Lec., 2 Lab.**
The first of a two semester course in human anatomy and physiology serving as a foundation course for present and future specialization for students of A.D. Nursing and allied health disciplines; other students interested in the study of structure and function of the human body should consult a counselor. No science background is presupposed. Major topics include cell structure and function, introductory physiological principles, organization of the body, its tissues, organs, and systems, blood and cardiovascular system, and the respiratory

system. Homeostasis is emphasized throughout. Laboratory fee required.

BIO 121 Introduction to Human Anatomy and Physiology **4 Cr., 3 Lec., 2 Lab.**
Prerequisite: Biology 120. The second of a two semester course sequence in human anatomy and physiology. An understanding of the content of Biology 120 or its equivalent is presupposed. Major topics include the neuro-muscular systems, digestive systems, excretory system, and endocrine system. Emphasis toward students of A.D. Nursing and other allied health disciplines is continued. Laboratory fee required.

BIO 203 Intermediate Botany **4 Cr., 3 Lec., 3 Lab.**
Prerequisites: Biology 101 and 102. A survey of the major plant groups with emphasis placed on morphology, physiology, classification, life cycles and evolutionary relationships to each other and their economic importance to man. Recommended for science majors. Laboratory fee required.

BIO 211 Invertebrate Zoology **4 Cr., 3 Lec., 3 Lab.**
Prerequisite: Eight hours of Biological Science. An intermediate level course surveying the major groups of animals below the level of chordates. Consideration is given to the phylogeny, taxonomy, morphology, physiology and biology of groups involved. Relationships and importance to higher animals and man are stressed. Recommended for Science majors. Laboratory fee required.

BIO 216 General Microbiology **4 Cr., 3 Lec., 4 Lab.**
Prerequisite: Biology 102 or consent of instructor. A study of microbes with emphasis on growth, reproduction, nutrition, genetics and ecology of micro-organisms. Laboratory activities will constitute a major part of the course. Recommended for science majors and science related programs. Laboratory fee required.

BIO 217 Field Biology **4 Cr., 3 Lec., 4 Lab.**
Prerequisite: Eight hours of biological science. Survey of local plant and animal life in relationship to their environment. Aquatic and terrestrial communities will be studied with reference to basic ecological principles and techniques. Emphasis will be placed upon classification, identification and collection of specimens in the field. Laboratory fee required.

BIO 221 Anatomy and Physiology I **4 Cr., 3 Lec., 3 Lab.**
Prerequisite: Biology 102 or approval of instructor. Recommended for science majors. First course of a two course sequence. Structure and function as related to the human skeletal, muscular and circulatory system. Emphasis placed on the inter-relationships of these systems. Laboratory fee required.

BIO 222 Anatomy and Physiology II **4 Cr., 3 Lec., 3 Lab.**
Prerequisite: Biology 221 or approval of instructor. Second course of a two course sequence. Structure and function as related to the human digestive, nervous, respiratory, reproductive and endocrine systems. Emphasis placed on the inter-relationships of these systems. Laboratory fee required.

BIO 224 Environmental Biology **4 Cr., 3 Lec., 3 Lab.**
Prerequisite: 6 hrs. Biology. A one semester course dealing with the basic principles and techniques of aquatic and terrestrial communities and how these relate to the problems facing man in a modern technological society. Laboratory fee required.

BIO 226 Genetics **4 Cr., 3 Lec., 3 Lab.**
Fundamental concepts in genetics to include Mendelian inheritance, recombination genetics, the biochemical theory of genetic material and mutation theory. Plant and animal materials will be used to study

population genetics, linkage, gene structure and function and other concepts of heredity. Laboratory fee required.

BIO 230 Mammalian Physiology **4 Cr., 3 Lec., 3 Lab.**
Prerequisite: 12 hours of biology, 8 hours of inorganic chemistry, concurrent registration in organic chemistry, and consent of instructor. A study of the function of various mammalian systems with emphasis placed on the interrelationships that exist. Utilization of instrumentation to measure various physiological parameters will be employed. Laboratory fee required.

BIO 235 Comparative Anatomy of the Vertebrates **4 Cr., 3 Lec., 4 Lab.**
Prerequisites: Biology 101 and 102. A survey of the major groups of vertebrates from a comparative point of view. The lectures will involve an intensive study of each vertebrate class, with emphasis on morphology and evolutionary relationships. Representatives of each vertebrate class will be dissected and compared in sequence during laboratory sessions. For science majors, pre-medical and pre-dental students. Laboratory fee required.

Blueprint Reading

BPR 177 Blueprint Reading **2 Cr., 1 Lec., 3 Lab.**
The decription and explanation of engineering drawings is the content of the course. This includes multiview projection, sections, auxiliaries, bill of materials, symbols, notes, conventions, and standards. The skills of visualization, dimensioning, and sketching of machine parts are covered in the course.

Business

BUS 105 Introduction to Business **3Cr., 3 Lec.**
Provides overall picture of business operation; includes analysis of specialized fields within business organization; identifies role of business in modern society. (This course is offered on campus and may be offered via television.)

BUS 131 Bookkeeping I **3 Cr., 3 Lec.**
The fundamental principles of double-entry bookkeeping as applied to practical business situations. Emphasis is given to the following: financial statements, trial balances, work sheets, special journals, adjusting and closing entries. A practice set covering the entire business cycle will be completed.

BUS 132 Bookkeeping II **3 Cr., 3 Lec.**
Prerequisite: Business 131. Attention will be given to accruals, bad debts, taxes, depreciation, controlling accounts and business vouchers. Bookkeeping for partnerships and corporations will be introduced.

BUS 136 Principles of Management **3 Cr., 3 Lec.**
A study of the process of management including the functions of planning, organizing, leading and controlling. Particular emphasis on policy formulation, decision making processes, operating problems, communications theory and motivation techniques.

BUS 137 Principles of Retailing **3 Cr., 3 Lec.**
The operation of the retail system of distribution. The interrelationship of consumer demand, inventory control, the buying sequence, personnel requirements, use of computer in retailing, store location and layout and credit policies.

BUS 143 Personal Finance **3 Cr., 3 Lec.**
A study of everyday financial problems encountered in managing personal affairs. Includes financial planning, insurance, budgeting, use of credit, home ownership, savings, investment and tax problems. (This course is offered on campus and may be offered via television.)

BUS 150 Management Training **4 Cr., 20 Lab.**
Prerequisite: Concurrent enrollment in approved mid-management program. Supervised employment in the student's chosen field. In-

tended to provide practical experience for students preparing for careers in business managment. Business 150 will be offered the first semester.

BUS 151 Management Training **4 Cr., 20 Lab.**
Prerequisite: Concurrent enrollment in approved mid-management program. A continuation of Business 150. Business 151 will be offered the second semester.

BUS 153 Small Business Management **3 Cr., 3 Lec.**
The student will be studying the fundamental approaches to planning, establishing and operating a small business. The day-to-day operation of the business and reporting procedures will be studied as well as exploring the concepts of general management.

BUS 154 Management Seminar: Role of Supervision **2 Cr., 2 Lec.**
Prerequisites: Concurrent enrollment in Business 150 and preliminary interview by mid-management faculty. Problem analysis and project development for students majoring in mid-management. Special emphasis is placed upon the development of management, goal setting and planning, leadership, communication and motivation as applied to the student's work experiences.

BUS 155 Management Seminar: Personnel Management **2 Cr., 2 Lec.**
Prerequisites: Business 150, Business 154 and concurrent enrollment in Business 151. A study of the principles, policies and practices relating to the personnel functions of business as applied to the student's work experiences.

BUS 157 Small Business Bookkeeping and Accounting Practices **3 Cr., 3 Lec.**
The student will study basic bookkeeping and accounting techniques essential to small business financial management and be able to apply them to the analysis and preparation of basic financial statements such as profit and loss, cash flow and statements of financial worth all fundamental to small business operations.

BUS 159 Beginning Shorthand **4 Cr., 3 Lec., 2 Lab.**
Prerequisite: Credit in or concurrent enrollment in Business 172 or one year of typing in high school. Introduction of fundamental principles of Gregg shorthand, Diamond Jubilee series. Includes development of ability to read, write and transcribe shorthand outlines. Development of knowledge of mechanics of English.

BUS 160 Office Machines **3 Cr., 3 Lec.**
Office machines is designed to provide the student with a skill in the operation of such machines as adding machines, printing calculators, electronic display calculators and electronic printing calculators. Emphasis is placed on developing the touch system for both speed and accuracy. A review of the fundamental mathematics needed for successful machine use in the typical office situation is included in the course.

BUS 162 Office Procedures **3 Cr., 3 Lec.**
Prerequisite: Business 172 or one year of typing in high school. Duties, responsibilities and personal qualifications of the office worker are emphasized. Units of work include filing, reprographics, mail, telephone, financial transactions and job applications.

BUS 165 Introduction to Word Processing **3 Cr., 3 Lec.**
Prerequisite: Business 174 or concurrent enrollment in Business 174. Provides an overall picture of word processing and its effect on tradi-

tional office operations. A study of word processing terminology and word processing centers which combine up-to-date equipment with streamlined paper handling procedures. Training in the transcription and distribution of business communications. Reinforcement of English skills and English mechanics.

BUS 166 Intermediate Shorthand **4 Cr., 3 Lec., 2 Lab**
(Formerly Business 164) *Prerequisites: Credit in Business 159 or one year of shorthand in high school, credit in Business 172 or one year of typing in high school.* Application of the principles of Gregg shorthand to develop the following: increased speed dictation, accuracy in typing from shorthand notes and emphasis on the beginning techniques of transcription skills. Included will be oral reading of shorthand outlines, speed building dictation and mailable copy. Special attention will be given to English fundamentals such as grammar, punctuation, etc.

BUS 167 Legal Terminology and Transcription **3 Cr., 3 Lec.**
Prerequisite: Completion of Intermediate Typewriting or typing speed of 50 words per minute; completion of Introduction to Word Processing. This course is designed to acquaint students with legal terminology, including correct spelling and use of legal terms and latin words and phrases, and provides intensive practice in building speed and accuracy in the transcription of legal terms.

BUS 171 Introduction to Supervision **3 Cr., 3 Lec.**
Prerequisite: Enrollment in technical/occupational program or consent of the instructor. A course studying today's supervisor and his problems. The course objective is to describe the practical concepts of modern-day, first line supervision. Emphasis is placed on discussing the supervisor's major functions: relations with others, motivation, communication, grievances, recruitment, counseling, and the fundamentals of cost accounting.

BUS 172 Beginning Typing **3 Cr., 2 Lec., 3 Lab.**
Fundamental techniques in typewriting are developed. The skills involved in typing manuscripts, business letters and tabulation are introduced. This course is for students with no previous training in typewriting.

BUS 174 Intermediate Typing **2 Cr. 1 Lec., 2 Lab.**
Prerequisite: Credit in Business 172 or one year of typing in high school. Further development of techniques. Emphasis will be placed on problem solving, increasing speed and accuracy in typing business forms, correspondence and manuscripts.

BUS 176 Beginning Typing I **1 Cr., 1 Lec., 1 Lab.**
This course introduces the typewriter parts; alphabetic keys; numeric keys; and symbol keys. Fundamental techniques are refined and speed building activities are developed. Course content is designed for students with no previous training in typewriting.

BUS 177 Beginning Typing II **1 Cr. 1 Lec.**
Prerequisite: Beginning Typing I. Practical business correspondence techniques are developed through memorandums, personal letters, and business letters. Skill building exercises are stressed throughout the course.

BUS 178 Beginning Typing III **1 Cr., 2 Lab.**
Prerequisite: Beginning Typing I. Manuscripts, tables, and production typing are emphasized. Proper report typing is developed. Skill building exercises are included.

BUS 187 Intermediate Shorthand I **2 Cr., 2 Lec.**
Prerequisite: Prior shorthand experience equivalent to Business 159 or one-year in high school. This course is designed for students who have a basic knowledge of Gregg shorthand theory and ability to take dictation at approximately 50 wpm. The course consists of a review of selected shorthand phrases, brief forms, word families, and word beginning and endings; the proper use of basic punctuation, typing format, and construction of simple business letters. Time for successful completion will vary from 20-40 hours dependent upon student prior experience.

BUS 188 Intermediate Shorthand II **1 Cr., 1 Lec.**
This course is designed for students who have a sound knowledge of Gregg shorthand theory and the ability to take dictation at approximately 70-80 wpm. The course consists of a review of selected shorthand phrases, brief forms, word families, and word beginnings and endings. Transcription exercises present students the opportunity to develop the ability to type accurate and attractive letters from their shorthand notes.

BUS 189 Intermediate Shorthand III **1 Cr., 2 Lab.**
This course is designed for students who have a thorough and complete knowledge of Gregg shorthand theory and are ready to pursue speed building activities. Special attention will be given to timed production work for mailable letters. The dictation speed is flexible and depends on student placement tests administered by the instructor.

BUS 192 Office Machines I **1 Cr., 1 Lec.**
A review of business mathematical skills necessary for the successful operation of office machines is provided. Ten-key touch development is introduced; speed development is incorporated with accuracy requirement for proper skill building.

BUS 193 Office Machines II **1 Cr., 1 Lec.**
Prerequisite: Office Machines I. This course covers extensive training on the basic office machines. Speed development and business applications are provided.

BUS 194 Office Machines III **1 Cr., 1 Lec.**
Prerequisite: Office Machines I. A continuation of extensive training on basic office machines. Speed development and business applications are stressed.

BUS 201 Principles of Accounting I **3 Cr., 3 Lec.**
Theory and practice of measuring and interpreting financial data for business units; study of problems of income measurement, such as depreciation, inventory valuation and credit losses; the operating cycle and the preparation of financial statements. (This course is offered on campus and may be offered via television.)

BUS 202 Principles of Accounting II **3 Cr., 3 Lec.**
Prerequisite: Business 201. Accounting procedures and practices applicable to partnerships and corporations; the use of cost data, budgetary controls, analysis and interpretation of financial reports for use by creditors, investors and management.

BUS 203 Intermediate Accounting I **3 Cr., 3 Lec.**
Prerequisite: Business 202. An intensive study of the concepts, principles, and practice of modern financial accounting. Included is a complete study of the purposes and procedures underlying the financial statements.

BUS 204 Managerial Accounting **3 Cr., 3 Lec.**
Prerequisite: Business 202. A study of accounting practices and procedures in providing information for business management. Emphasis is placed on the preparation and internal use of financial statements and budgets, types of accounting system and other accounting information and procedures used in management planning and control.

BUS 205 Business Finance **3 Cr., 3 Lec.**
Prerequisites: Economics 201 or 202 and Business 201. This course is desiged to give the students a working knowledge of the financial system in the free enterprise system. Interest rates, value analysis, financing of business firms and government, security markets, analysis of financial requirements for decision making and capital requirements.

BUS 206 Principles of Marketing **3 Cr., 3 Lec.**
A study of the scope and structure of marketing institutions in the marketplace today. Analysis of the marketing functions, consumer behavior, market research, sales forecasting and relevant state and federal laws.

BUS 209 Principles of Insurance **3 Cr., 3 Lec.**
This survey course in insurance is oriented toward business applications and is designed to inform the student of the life, property and casualty insurance needs of business and industry with emphasis on a systematic approach to risk management. Included are the study of credit life insurance, property, auto, accounts receivable, business interruption, key-man life insurance, accident and health, business liability, workmen's compensation, bonding and title insurance coverages.

BUS 210 Small Business Organization, Acquisition and Finance **3 Cr., 3 Lec.**
The student will study alternative strategies and procedures for organizing a business, the planning necessary for establishing a business, evaluation of a business for acquisition purposes, and how to prepare and present a loan proposal.

BUS 211 Small Business Operations **3 Cr., 3 Lec.**
The student will be introduced to problems associated with day to day operations of small business. Case studies and problem solving will be emphasized to prepare the student to cope with full range of operational management problems such as compliance with regulations, personnel administration, accounts receivable management, and business insurance.

BUS 230 Salesmanship **3 Cr., 3 Lec.**
A course in general salesmanship involving the factors of successful selling of goods and ideas. Buying motives, sales psychology, customer approach and sales techniques are studied.

BUS 231 Business Correspondence **3 Cr., 3 Lec.**
Prerequisites: Credit in Business 172 or one year of typing in high school; credit in Communications 131 or English 101. A practical course that includes a study of letter forms, the mechanics of writing and composing various types of communications. A critical analysis of the appearance and content of representative business correspondence is made.

BUS 233 Advertising and Sales Promotion **3 Cr., 3 Lec.**
Introduces the fundamental principles, practices and common media used in persuasive communication. Includes an insight into Buyer behavior, use of advertising media to motivate consumers and methods of stimulating salespeople and retailers. Familiarizes the student with the management of promotion programs with respect to goals, strategies, evaluation and control of promotional activities.

BUS 234 Business Law **3 Cr., 3 Lec.**
This course is designed to acquaint the student with the historical and ethical background of the law and to familiarize him with present day principles of law. Particular emphasis on contracts, property (bailments, sales, leases, wills and estates) and torts.

BUS 237 Organizational Behavior **3 Cr., 3 Lec.**
This course endeavors to focus on the persisting human problems of

administration in modern organization as they relate to the theory and methods of behavioral science.

BUS 238 Cost Accounting **3 Cr., 3 Lec.**
Prerequisite: Business 202. The theory and practice of accounting for a manufacturing concern. Detailed study of the measurement and control of material, labor and factory overhead for the job order and process cost system. Budgets, variance analysis, standard costs, joint and by-products costing will be discussed.

BUS 239 Income Tax Accounting **3 Cr., 3 Lec.**
Prerequisite: Business 202 or consent of instructor. Provides an understanding of basic income tax laws applicable to individuals and sole proprietorships. Subjects treated include personal exemptions, gross income, business expenses, non-business deductions, capital gains and losses. Emphasis is on those problems commonly encountered in the preparation of income tax returns.

BUS 242 Personnel Administration **3 Cr., 3 Lec.**
Personnel administration is a business course designed to provide a solid foundation in the fundamentals, theories, principles and practices of people management. Emphasis will be on people and the factors that are relevant to employment of people; i.e., recruitment, selection, training, job development, interactions with others, labor management relations, government regulations, etc. The managerial functions of planning, organizing, staffing, directing and controlling will provide the framework for applying the principles which are significant in personnel interactions and management.

BUS 250 Management Training **4 Cr., 20 Lab.**
Prerequisites: Business 150-151; concurrent enrollment in Business 254. Continuation of supervised employment in the student's chosen field. Intended to provide increased supervisory responsibility for students preparing for careers in business management. Business 250 will be offered the first semester.

BUS 251 Management Training **4 Cr., 20 Lab.**
Prerequisites: Business 150-151; concurrent enrollment in Business 255. A continuation of Business 250. Business 251 will be offered the second semester.

BUS 254 Management Seminar: Organizational Development **2 Cr., 2 Lec.**
Prerequisites: Business 151, 155 and concurrent enrollment in Business 250. A study of the organizational objectives and management of human resources including the various approaches to organizational theory as applied to the student's work experiences.

BUS 255 Management Seminar: Business Strategy, the Decision Process and Problem Solving **2 Cr., 2 Lec.**
Prerequisites: Business 250. Business 254 and concurrent enrollment in Business 251. Business strategy and the decision making process applied to the first line supervisor and middle-management positions. Specific emphasis will be placed upon the application of the student's course knowledge and work experiences.

BUS 256 Office Management **3 Cr., 3 Lec.**
A study of the organization, design, and control of office activities. Included is a study of standards of office practice; office services; wage payment plans; selection and training and supervising of office employees; office planning, organizing, and controlling techniques; and duties and responsibilities of the office manager.

BUS 265 Word Processing Practices and Procedures **3 Cr., 3 Lec.**

Prerequisite: Successful completion of Business 165. Theory and practice of translating ideas into words, putting those words on paper and turning that paper into communication. Emphasis on training in composing and dictating business communications, developing teamwork skills, setting priorities, scheduling, understanding procedures, researching, storing and retrieving documents and managing word processing systems. Further development of transcribing and magnetic keyboarding skills. Reinforcement of typing skills and English mechanics. Goal is development of employable skills in an office or word processing center.

BUS 266 Advanced Shorthand **4 Cr., 3 Lec., 2 Lab.**

Prerequisites: Credit in Business 166 or two years of shorthand in high school, credit in Business 174 or two years of typing in high school. Emphasis is on specialized speed building dictation, timed typewritten mailable transcription, additional vocabulary building and extensive production work capabilities. Continued development of this high level skill enables the student to meet the challenges presented in any office situation.

BUS 273 Advanced Typing **2 Cr., 1 Lec., 2 Lab.**

Prerequisite: Credit in Business 174 or two years of typing in high school. Decision making and timed production of all types of business material are emphasized. A continuation of skill development and a review of typing techniques are also stressed. This course will demand accuracy at advanced speeds.

BUS 274 Legal Secretarial Procedures **3 Cr., 3 Lec.**

Prerequisite: Completion of Intermediate Typewriting or typing speed of 50 words per minute; completion of intermediate shorthand or shorthand dictation speed of 80 words per minute. This course is designed for (1) the student who is training for a career as a legal secretary; (2) the secretary who wishes to train for a career as a legal secretary; (3) the legal secretary who desires a more comprehensive background in legal secretarial procedures. Specialized training is provided in knowledges and skills required of legal secretaries in the areas of reminder and filing systems, telephone usage, dictation and correspondence, preparation of legal documents, the court system, client contacts, use of the Law Library, research techniques, timekeeping, billing, law office bookkeeping, legal secretarial ethics, and how to obtain a legal secretarial position.

BUS 275 Secretarial Procedures **3 Cr., 3 Lec.**

Prerequisites: Completion of or concurrent enrollment in Business 174 and completion of or concurrent enrollment in either Business 166 or Business 265. This course is designed primarily to make the student think in terms of initiative, creative thinking, and follow-through within these units of work: in-basket exercises, decision-making problems, utilization of the shorthand/transcription skills, units on public and personal relations, supervisory principles, business ethics and organizing time and work

BUS 713 (See Cooperative Work Experience) **3 Cr.**

BUS 714 (See Cooperative Work Experience) **4 Cr.**

BUS 803 (See Cooperative Work Experience) **3 Cr.**

BUS 804 (See Cooperative Work Experience) **4 Cr.**

BUS 813 (See Cooperative Work Experience) **3 Cr.**

BUS 814 (See Cooperative Work Experience) **4 Cr.**

Carpentry

CAR 101 Woodworking Tools and Materials **3 Cr., 90 Contact Hrs.**
This course is designed to train the student in the proper use of the various types of woodworking tools and equipment. The machines used include the table saw, jointer, planer, radial arm saw, router, sander and various portable power tools. Proper safety procedures in the use of these woodworking machines are emphasized. Laboratory fee required.

CAR 102 Site Preparation **3 Cr., 90 Contact Hrs.**
This course will give the student the necessary knowledge and skills for laying out and constructing domestic building foundations, pier construction and placement, erecting concrete foundation forms, slab foundations and pouring concrete foundations. Laboratory fee required.

CAR 103 Construction Safety **1 Cr., 30 Contact Hrs.**
Basic course in construction safety based on O.S.H.A. standards as related to residential and commercial construction.

CAR 104 Residential Framing **3 Cr., 90 Contact Hrs.**
In this course, the student will learn how to erect various types of frame structures, including balloon and western framing. The course will include construction of floor systems, ceilings and walls. Proper safety procedures are emphasized. Laboratory fee required.

CAR 105 Roof Framing I **3 Cr., 90 Contact Hrs.**
The student will gain the knowledge and develop the skills needed to lay rafters of all types, cut and erect rafters for gable, shed and gambrel roofs. He will learn the styles, terminology commonly used in roof framing. Laboratory fee required.

CAR 106 Exterior Trim and Finish **3 Cr., 90 Contact Hrs.**
In this course, the student will develop the skills related to exterior wall coverings, roof cornice and roofing. The student will learn to apply wall coverings, roof sheathing, shingles and cornice to different styles of roofs and buildings. Laboratory fee required.

CAR 107 Construction Cost Estimating **3 Cr., 48 Contact Hrs.**
Prerequisite: Blueprint Reading 177. This course is designed to train the student to prepare cost estimates of residential and small commercial structures. Estimates will be made from blueprints and specifications in order to familiarize the student with the process of bid preparation.

CAR 108 Modern Construction Practices **3 Cr., 90 Contact Hrs.**
A study of the basic terminology used in today's commercial construction. This will be backed up with a study of the design and erection of tilt-up wall construction and erection and study of pre-cast panels and other new systems used in today's commercial building. Laboratory fee required.

CAR 109 Concrete Slabs in Commercial Building **3 Cr., 90 Contact Hrs.**
The student will study the different designs and systems used in below grade concrete slabs and suspended concrete slabs. The student will gain practical knowledge in the erection and shoring/scaffolding of all types of concrete slabs. Laboratory fee required.

CAR 201 Cabinet Building I **3 Cr., 90 Contact Hrs.**
The student will study design and layout of modern cabinets. Emphasis will be placed on quality workmanship, making material lists, drafting cabinet details and the installation of factory built cabinets. Laboratory fee required.

CAR 202 Cabinet Building II **3 Cr., 90 Contact Hrs.**
The student will use cabinet designs and build a cabinet from rough materials to a finished product. Laboratory fee required.

CAR 203 Stair Building **3 Cr., 90 Contact Hrs.**
In this course, the student will gain the knowledge and develop the skills needed in building stairs of all types. The course will include riser and tread calculations, material estimating, the layout and construction of a staircase. The course will also cover the construction of stair forms for concrete stairs. Laboratory fee required.

CAR 204 Commercial Wall Forms **3 Cr., 90 Contact Hrs.**
The student will study different types and systems of construction of different wall systems such as basement walls, retaining, walls, patented walls and job built walls. The emphasis will be placed on erection of these forms systems in wall construction. Laboratory fee required.

CAR 205 Roof Framing II **3 Cr., 90 Contact Hrs.**
The student will study the hip and mansard type roof systems, layouts and how to cut and erect each type of roof system. Students will also study the design and erection of a truss roof system. Laboratory fee required.

CAR 206 Verticle Piers & Columns **3 Cr., 90 Contact Hrs.**
A course in which the student will study different forms used in construction of piers and concrete columns. Emphasis will be placed on layout and erection of different systems used in today's commercial construction. Laboratory fee required.

CAR 208 Interior Finish I **3 Cr., 90 Contact Hrs.**
This course provides training in the cutting, application and finish of interior paneling, dry wall, trim, fitting and hanging interior doors and in the installation of hardware. Laboratory fee required.

CAR 209 Interior Finish II—Commercial **3 Cr., 90 Contact Hrs.**
The student will study interior finish of commercial buildings such as store fronts, metal frame walls and floor systems, moveable partitions, dropped and suspended ceiling systems. The student will practice layout and erection of the systems. Laboratory fee required.

CAR 210 Horizontal Beam Form & Fire Encasement Forms **3 Cr., 90 Contact Hrs.**
The student will study how horizontal beams and fireproof encasement forms are designed. The different types of materials used in their construction will be studied along with the different commercial systems available with emphasis placed on safety. Laboratory fee required.

CAR 211 Properties of Concrete **1 Cr., 30 Contact Hrs.**
The student will study one of the building industries most used building products, concrete. Emphasis will be placed on what goes into the manufacturing of concrete, how to select and design concrete and methods used in placing and finishing concrete. Laboratory fee required.

CAR 703	(See Cooperative Work Experience)	**3 Cr.**
CAR 704	(See Cooperative Work Experience)	**4 Cr.**
CAR 713	(See Cooperative Work Experience)	**3 Cr.**
CAR 714	(See Cooperative Work Experience)	**4 Cr.**
CAR 803	(See Cooperative Work Experience)	**3 Cr.**
CAR 804	(See Cooperative Work Experience)	**4 Cr.**
CAR 813	(See Cooperative Work Experience)	**3 Cr.**
CAR 814	(See Cooperative Work Experience)	**4 Cr.**

Chemistry

CHM 101 General Chemistry **4 Cr., 3 Lec., 3 Lab.**
Prerequisite: Developmental Mathematics 093 or equivalent. Designed for science and science-related majors. The course includes the fundamental laws and theories dealing with the structure and interactions of matter and the use of these principles in understanding the properties of matter, chemical bonding, chemical reactions, the physical states of matter and changes of state. The fundamental principles are applied to the solution of quantitative problems relating to chemistry. Laboratory fee required.

CHM 102 General Chemistry **4 Cr. 3 Lec., 3 Lab.**
Prerequisite: Chemistry 101. Designed for science and science-related majors, this course is a continuation of Chemistry 101. The fundamental concepts introduced previously, together with additional ones, are applied to a variety of topics, including solutions and colloids, chemical kinetics and equilibrium, electrochemistry and nuclear chemistry. Qualitative inorganic analysis is included in the laboratory work. Laboratory fee required.

CHM 115 General Chemistry **4 Cr., 3 Lec., 3 Lab.**
Prerequisite: Developmental Mathematics 091 or equivalent. Designed for non-science majors, the course traces the development of theoretical concepts and the evolution of these concepts in explaining various observations and laws relating to chemical bonding reactions, states of matter, solutions, electrochemistry and nuclear chemistry. The descriptive chemistry of some common elements and inorganic compounds is included. Laboratory fee required.

CHM 116 General Chemistry **4 Cr., 3 Lec., 3 Lab.**
Prerequisite: Chemistry 115. Designed for non-science majors, this course covers organic chemistry and biochemistry. The important classes of organic compounds are surveyed with the concept of structure providing the central theme. The biochemistry section includes carbohydrates, proteins, lipids, chemistry of heredity, disease and therapy and plant biochemistry. Laboratory fee required.

CHM 201 Organic Chemistry I **4 Cr. 3 Lec., 4 Lab.**
Prerequisite: Chemistry 102. Designed for science and science related majors. An integrated introductory course in organic chemistry dealing with the fundamental types of organic compounds, their nomenclature, classification, reactions and applications. The reactions of aliphatic and aromatic compounds are discussed in terms of modern electronic theory with emphasis on reaction mechanisms, stereochemistry, transition state theory and technique of organic synthesis. Laboratory fee required.

CHM 202 Organic Chemistry II **4 Cr., 3 Lec., 4 Lab.**
Prerequisite: Chemistry 201. Designed for science and science related majors, this course is a continuation of Chemistry 201. Emphasis will be given to the further development of aliphatic and aromatic systems, polyfunctional compounds including amino acids, proteins, carbohydrates, sugars, heterocyclic and related compounds including amino acids, proteins, carbohydrtes, sugars, heterocyclic and related compounds. Instrumental techniques will be used to identify compounds. Laboratory fee required.

CHM 203 Quantitative Analysis **4 Cr., 2 Lec., 6 Lab.**
Prerequisites: Chemistry 102, Mathematics 101 or Mathematics 104 or equivalent. This course includes the principles of chemistry as applied by the analytical chemist to quantitative determinations. Topics include gravimetry, oxidation-reduction, indicators and acid-base theory. Laboratory experience focuses on the fundamentals of gravimetric and volumetric analysis with an introduction to colorimetry. Laboratory fee required.

CHM 205 Chemical Calculations **2 Cr., 2 Lec.**
Prerequisite: Chemistry 102. Advanced review of chemical calculations of general chemistry with special emphasis of stoichiometry and chemical equilibrium.

CHM 234 Instrumental Analysis **4 Cr., 2 Lec., 6 Lab.**
Prerequisite: Chemistry 203 or permission of instructor. This course emphasizes the role of modern electronic instrumentation in analysis. Laboratory work includes infrared and ultraviolet spectroscopy, gas chromatography, potentiometric titration, electrochemistry, continuous flow analysis, scintillation counting, eletrophoresis, flame photometry, and atomic absorption spectrophotometry as analytical tools. Laboratory fee required.

College Learning Skills

CLS 100 College Learning Skills **1 Cr., 1 Lec.**
The course will provide individualized study and practice in reading, study skills and/or composition. It is designed for students who wish to extend their learning skills for academic or career programs. May be repeated for a maximum of three (3) credits.

Communications

COM 131 Applied Composition and Speech **3 Cr., 3 Lec.**
The study of communications skills as a practical means of preparing for successful performance in the student's chosen vocation. Practice in writing letters, applications, resumes and short reports.

COM 132 Applied Composition and Speech **3 Cr., 3 Lec.**
Prerequisite: Communications 131 or consent of instructor. The study of communication processes with emphasis on written persuasion directly related to occupational training and work experience. Use of expository techniques in business letters and documented reports. Practice in oral communications.

Computing Science

CS 175 Introduction to Computing Science **3 Cr., 3 Lec.**
Provides a basic understanding of the computer, cultural impact, history of computers, vocabulary, flow charts, data representation and an introduction to procedure-oriented languages with general applications.

Cooperative Work Experience

Cooperative Work Experience Experience
701, 711, 801, 811 **1 Cr.**
702, 712, 802, 812 **2 Cr.**
703, 713, 803, 813 **3 Cr.**
704, 714, 804, 814 **4 Cr.**
Prerequisite: Completion of two courses in the student's major or instructor/coordinator approval. These courses consist of a combination of seminars and on-the-job applications of theory and laboratory instruction received in the formal courses of the students' major curricula. The student will be placed in work-study positions in their technical occupational fields that will test their skills and abilities to function successfully in their respective occupations. The students' learning in these work internship courses will be guided by sets of learning objectives formulated at the beginning of each semester by the students, their instructors/coordinators and their supervisors at work. The instructors will determine if the learning objectives are valid and will give final approval for credit.

Dance

DAN 150 Beginning Ballet I **3 Cr., 1 Lec., 3 Lab.**
Course designed to explore basic ballet technique — posture, balance, coordination of body, rhythm, and flow of physical energy through the art form. Theory, terminology, ballet history, and current attitudes and events in ballet will also be studied. Barre exercises and centre floor combinations given. Laboratory fee required.

DAN 151 Beginning Ballet II **3 Cr., 1 Lec., 3 Lab.**
Prerequisite: Dance 150. Continuation of Beginning Ballet I with emphasis on expansion of combinations at the barre. Addition of 'connecting' steps learned at centre. Introduction of jumps and pirouettes. Laboratory fee required.

DAN 155 Jazz I **1 Cr., 3 Lab.**
A course designed to introduce students to basic skills of jazz dance with emphasis on general body technique and development, rhythm awareness, jazz styles and rhythmic combinations of movement. Laboratory fee required.

DAN 156 Jazz II **1 Cr., 3 Lab.**
Prerequisite: Jazz I or consent of instructor. A course designed for the continuance of work on skills and style inherent in jazz dance. Class work will deal with technical skills, combinations of steps and skills into dance patterns, and exploration of composition in jazz form. Laboratory fee required.

Developmental Communications

DC 095 Communication Skills **3 Cr., 3 Lec.**
A course designed for the student who needs grammar, paragraph structure, reading skills, and/oral communication to enhance his proficiency in language communications. Students will be tested and given prescribed work in one or a combination of the elements of study as the individual needs indicate.

DC 120 Communication Skills **3 Cr., 2 Lec., 2 Lab.**
Designed for students with significant problems in communications development causing learning problems. Group sessions are supplemented with individual evaluations to provide a basis for the development of personalized programs based on needs. Inter-departmental planning provides alternative modes of learning. Special attention is given to oral language as the initial language form. The course is organized in terms of skills development in a competency-based mode and enrollment may be accepted on a flexible basis on instructor referral.

Developmental Learning

DL 094 Learning Skills Improvement **1 Cr., 2 Lab.**
A course designed for the student who needs improvement in developmental skills to enhance his performance in academic or career programs. Student will be assigned specific objectives as the individual needs indicate. May be repeated for a maximum of three (3) credits.

Developmental Mathematics

Developmental Mathematics
Developmental Mathematics courses may be taken for review of mathematics skills. Developmental Mathematics 093 satisfies prerequisites for Mathematics 101, 104, 111 and 115. Developmental Mathematics 091 satisfies prerequisites for Mathematics 130, 139 and 195.

DM 060 Basic Mathematics I **1 Cr., 1 Lec.**
This course is designed to give an understanding of fundamental operations dealing with selected topics such as whole numbers, decimals and setting up and solving ratio and proportions.

DM 061 Basic Mathematics II **1 Cr., 1 Lec.**
This course is designed to give an understanding of fractions by dealing with the selected topics including primes, factors, least common multiples and basic operations with fractions. This course also is designed to give an understanding of the basic operations of percent.

DM 062 Pre Business **1 Cr., 1 Lec.**
This course is designed to introduce students to business math by dealing with such selected topics and discounts and commissions, interest, metric and English measuring systems, area and volume.

DM 063 Pre Algebra **1 Cr., 1 Lec.**
This course is designed to introduce students to the language of algebra by dealing with such topics as integers, metrics, equations and properties of counting numbers.

DM 070 Elementary Algebra I **1 Cr., 1 Lec.**
Prerequisites: Developmental Mathematics 090, 063 or equivalent. Designed as an introduction to algebra which includes selected topics such as basic principles and operations of sets, counting numbers and integers.

DM 071 Elementary Algebra II **1 Cr., 1 Lec.**
Prerequisite: Developmental Mathematics 070 or equivalent. Designed as a sequel to Developmental Mathematics 070 which includes selected topics such as rational numbers, algebraic polynomials, factoring and algebraic fractions.

DM 072 Elementary Algebra III **1 Cr., 1 Lec.**
Prerequisite: Developmental Mathematics 071 or equivalent. Designed as a sequel to Developmental Mathematics 071 to include selected topics such as fractional and quadratic equations, quadratic equations with irrational solutions, and systems of equations involving two variables.

DM 073 Introduction to Geometry **1 Cr., 1 Lec.**
This course is designed to introduce principles of geometry. Axioms, theorems, axiom systems, models of such systems, and methods of proof will be stressed.

DM 080 Intermediate Algebra I **1 Cr., 1 Lec.**
Prerequisites: Developmental Mathematics 072, 091 or equivalent. This course is designed to include a study of selected topics such as systems of rational numbers, real numbers, and complex numbers.

DM 081 Intermediate Algebra II **1 Cr., 1 Lec.**
Prerequisite: Developmental Mathematics 080 or equivalent. Designed as a sequel to Developmental Mathematics 080 and includes such selected topics as sets, relations, functions, inequalities and absolute values.

DM 082 Intermediate Algebra III **1 Cr., 1 Lec.**
Prerequisite: Developmental Mathematics 081 or equivalent. This course is designed as a sequel to Developmental Mathematics 081 and includes such selected topics as graphing, exponents, and factoring.

DM 090 Pre-Algebra Mathematics **3 Cr., 3 Lec.**
This course is designed to develop an understanding of fundamental operations using whole numbers, fractions, decimals and percentages and to strengthen basic skills in mathematics. The course is planned primarily for students who need to review basic mathematical processes. It is the first step in the mathematics sequence and includes an introduction to algebra.

DM 091 Elementary Algebra **3 Cr., 3 Lec.**
Prerequisite: Developmental Mathematics 090 or equivalent. This course is designed to develop an understanding of first year algebra. It includes special products and factoring, fractions, equations, graphs, functions and an introduction to geometry.

DM 093 Intermediate Algebra **3 Cr., 3 Lec.**
Prerequisite: One year of high school algebra or Developmental Mathematics 091. Includes the terminology of sets, properties of real numbers, fundamental operations of polynomials and fractions, products, factoring, radicals and rational exponents. Also covered are solutions of linear, fractional, quadratic and systems of linear equations, coordinate systems and graphing.

Developmental Reading

Developmental Reading
Students can improve and refine their performance in the English sequence by enrolling in developmental reading courses. Developmental Reading 090 and 091 are valuable skill development courses for English 101. Reading 101 is especially helpful in English 102 and the sophomore level literature courses. See catalogue description in reading for full course content.

DR 090 Techniques of Reading/Learning **3 Cr., 3 Lec.**
Developmental Reading 090 is designed to meet individual needs for proficiency in reading comprehension, vocabulary development, study skills and reading for success in academic areas and career advancement. It emphasizes learning how to learn and includes reading/learning experiences developed to strengthen the total educational background of each student. Developmental Reading 090 and Developmental Reading 091 are offered in a laboratory setting employing varied instructional methods.

DR 091 Techniques of Reading/Learning **3 Cr., 3 Lec.**
Developmental Reading 091 is designed to meet individual needs for proficiency in reading comprehension, vocabulary development, study skills and reading for success in academic areas and career advancement. It emphasizes learning how to learn and includes reading/learning experiences developed to strengthen the total educational background of each student. Developmental Reading 090 and Developmental Reading 091 are offered in a laboratory setting employing varied instructional methods.

Developmental Writing

Developmental Writing
Students can improve their level of success in all courses requiring writing assignments by registering for Developmental Writing. These courses, offered for one to three hours credit, consider organization skills and research paper styles, as well as individual writing weaknesses.

DW 090 Writing **3 Cr., 3 Lec.**
Developmental Writing 090 emphasizes the diagnosis and correction of deficiencies in basic writing skills. Spelling, grammar, vocabulary improvement and principles of sentence and paragraph structure (as well as experience in organization for composition) are taught in a laboratory utilizing individualized instruction techniques.

DW 091 Writing **3 Cr., 3 Lec.**
Developmental Writing 091 is a sequel to Writing 090 and concentrates on the composition process; therefore, it is important to develop the student's skills of organization, transition and revision. His program of composition will vary according to his individual needs, which may include brief, simple forms as well as more complex critical and research writing.

DW 092 Writing Lab **1 Cr., 3 Lab.**
Developmental Writing Lab 092 is a workshop to facilitate writing success for course work and other individual interests. Students are given instruction and supervision in written assignments, including the research paper and in editing for mechanical effectiveness.

Diesel Mechanics

DME 101 Caterpillar Diesel Engine **4 Cr., 120 Contact Hrs.**
Prerequisite: Math 195 or concurrent enrollment or consent of instructor. Complete overhaul of a caterpillar diesel engine including removal, disassembly, servicing and assembly of each major component. Laboratory fee required.

DME 102 Cummins Diesel Engine **4 Cr., 120 Contact Hrs.**
Complete overhaul of a Cummins diesel engine including removal disassembly, services and assembly of each major component. Laboratory fee required.

DME 103 Detroit Diesel Engine **4 Cr., 120 Contact Hrs.**
Complete overhaul of a Detroit diesel engine including removal, disassembly, servicing and assembly of each major component. Laboratory fee required.

DME 121 Standard Transmissions **3 Cr., 90 Contact Hrs.**
Prerequisite: Physics 131 or concurrent enrollment in or consent of instructor. Removal, disassembly, inspection, assembly and installation of 5 speed and 10 speed standard transmissions. Laboratory fee required.

DME 122 Heavy Duty Clutches and Torque Convertors **2 Cr., 60 Contact Hrs.**
Removal, repair and installation of heavy duty clutches. Theory of operation, removal, repair and installation of torque convertors. Laboratory fee required.

DME 123 Air Brake Systems **2 Cr., 60 Contact Hrs.**
Inspection, repair and adjustments of air brake systems used on heavy trucks. Laboratory fee required.

DME 124 Differentials and Drive Lines **2 Cr., 60 Contact Hrs.**
Removal, disassembly, repair, reassembly and installation of differentials. Laboratory fee required.

DME 125 Automatic Transmissions **2 Cr., 60 Contact Hrs.**
Removal inspection, repair and assembly of automatic transmissions. Laboratory fee required.

DME 137 Fundamentals of Oxygen and Acetylene and ARC Welding **3 Cr., 90 Contact Hrs.**
Two methods of welding are included in this course, oxyacetylene and ARC. It covers the source of heat, application of each method, supplies necessary for a high weld, safety practices, metals and their properties. Applications and practice comprise a major part of the course. Laboratory fee required.

DME 141 Caterpillar Diesel Engine Tune-up and Fuel Systems **2 Cr., 60 Contact Hrs.**
Diagnosing, locating and correcting troubles encountered in caterpillar diesel engine operation. Including the removal, inspection, testing, adjusting, and installation of fuel system components, such as pumps, injectors, filters, lines and governors. Laboratory fee required.

DME 142 Cummins Diesel Engine Tune-Up and Fuel System **2 Cr., 60 Contact Hrs.**
Diagnosing, locating and correcting troubles encountered in cummins diesel engine operation. Including the removal, inspection, testing, adjusting, and installation of fuel system components, such as pumps, injectors, filters, lines and governors. Laboratory fee required.

DME 143 Detroit Diesel Engine Tune-Up and Fuel System **2 Cr., 60 Contact Hrs.**
Diagnosing, locating and correcting troubles encountered in detroit diesel engine operation, including the removal, inspection, testing, adjusting and installation of fuel system components, such as injectors, filters, lines and governors. Laboratory fee required.

DME 144 Diesel Engine Air Induction Cooling and Lubrication Systems **1 Cr., 30 Contact Hrs.**
Prerequisite: COM 131 or concurrent enrollment in or consent of instructor. A study of the theory of operation of the diesel engine. Troubleshooting and servicing engine air induction, cooling and lubrication systems. Laboratory fee required.

DME 145 Electrical Theory and Basic Circuitry **1 Cr., 30 Contact Hrs.**
An introduction to the fundamentals of electricity and magnetism. Laboratory fee required.

DME 146 Starting, Charging, Lighting and Accessory Circuitry **1 Cr., 30 Contact Hrs.**
Removal, maintenance and repair of starting motors, alternators, regulators, switches and wiring circuits related to diesel powered equipment. Laboratory fee required.

DME 703	(See Cooperative Work Experience)	**3 Cr.**
DME 704	(See Cooperative Work Experience)	**4 Cr.**
DME 713	(See Cooperative Work Experience)	**3 Cr.**
DME 714	(See Cooperative Work Experience)	**4 Cr.**
DME 803	(See Cooperative Work Experience)	**3 Cr.**
DME 804	(See Cooperative Work Experience)	**4 Cr.**
DME 813	(See Cooperative Work Experience)	**3 Cr.**
DME 814	(See Cooperative Work Experience)	**4 Cr.**

Directed Studies

Directed Studies

DS 901	**1 Cr.**
DS 902	**2 Cr.**
DS 903	**3 Cr.**

Prerequisite: Completion of twelve semester hours in residence and the approval of a division chairman and the appropriate dean. Recommended for honor students in a major area offered by a division of for students requesting study in-depth in a particular area. The courses may include special projects, honors seminars, field study or independent study. Upon approval, may be repeated for credit.

Distribution Technology

DT 130 Introduction to Distribution **3 Cr., 3 Lec.**
This course studies the place of wholesale distribution among producers, institutional and industrial customers, and ultimate consumers. The course examines the role of the wholesale distributor in the channels of distribution and serves a general survey of the wholesaling functions for the student contemplating a career in the wholesale distribution industry. This course is also appropriate for existing new employees already in entry-level positions with a demonstrated capacity for advancement.

DT 131 Principles and Practices of Wholesale Marketing I **3 Cr., 3 Lec.**
Part I of a two part program designed to introduce the student to wholesale marketing principles and procedures as practiced in the Dallas/Fort Worth Regional Distribution Center. Part I covers the Regional Wholesale Marketing Environment both current and forecast, determination of product, product lines and brand policies; evaluation of relationships among cost, price and profit levels, and primary considerations concerning storage and channels of distribution.

DT 132 Principles and Practices of Wholesale Marketing II **3 Cr., 3 Lec.**
A continuation of the study of principles and practices of wholesale marketing. Addresses the development and organization of the total sales effort, customer service requirements, credit and collection policies and overall analysis of the marketing system. Course is problem solving oriented and culminates in development of a marketing plan encompassing all aspects of the wholesale marketing function.

DT 133 Transportation Management **3 Cr., 3 Lec.**
Students will study the role of the transportation function within the physical distribution system. Special emphasis will be placed upon modern planning and control techniques associated with the design

and operation of efficient and cost effective transportation systems. Carrier services, pricing structures, documentation, liability, claims and regulations of transportation will also be included.

DT 230 Materials Handling and Physical Distribution **3 Cr., 3 Lec.**
This course covers the operation and management of the materials handling and physical distribution functions pertinent to the warehousing environment — the largest cost center in a wholesale distribution business. This course integrates the planning, organizing, staffing, equipping, operating and maintaining functions involved in the management of warehousing facilities. Included in the course will be field trips to inspect on-going physical distribution facilities to complement each phase of study.

DT 231 Purchasing, Pricing and Inventory Management **3 Cr., 3 Lec.**
This course introduces the student to the essential planning and operational considerations upon which wholesale distribution strategies are based. Purchasing strategies and typical "buy plans" integrating sales forecasts, lead time and storage and distribution capabilities will be investigated. The student will also evaluate alternative price and discounting tactics, inventory management systems (cardex, computer, etc.), and establishment and maintenance of specified inventory levels and cost controls.

DT 803 (See Cooperative Work Experience) **3 Cr.**

DT 804 (See Cooperative Work Experience) **4 Cr.**

DT 813 (See Cooperative Work Experience) **3 Cr.**

DT 814 (See Cooperative Work Experience) **4 Cr.**

Earth Science

ES 117 Earth Science **4 Cr., 3 Lec., 3 Lab.**
The course encompasses the interaction of the earth sciences and man's physical world. Geology, astronomy, meteorology and space science are emphasized through the application of selected principles and concepts of the applied sciences. The course is directed toward the non-science major. Laboratory fee required. (This course is offered on campus and may be offered via television.)

Ecology

ECY 291 Man and His Environment II **3 Cr., 3 Lec.**
A course designed to increase environmental awareness and knowledge. Areas of study include pollution, erosion, land use, energy resource depletion, overpopulation and the effects of unguided technological development. Through documentaries and interviews with experts, an emphasis is placed on proper planning of societal and individual action in order to protect the natural environment. (This course may be offered via television.)

Economics

ECO 201 Principles of Economics I **3 Cr., 3 Lec.**
The fundamental principles of macroeconomics. Economic organization, national income determination, money and banking, monetary and fiscal policy, economic fluctuation and growth. Sophomore standing recommended. (This course is offered on campus and may be offered via television.)

ECO 202 Principles of Economics II **3 Cr., 3 Lec.**
Prerequisite: Economics 201 or the consent of the instructor. The fundamental principles of microeconomics. Theory of demand, supply and price of factors; income distribution; theory of the firm. Emphasis also on international economics and contemporary economic problems.

Electricity

ELE 100 Electrical Orientation **1 Cr., 30 Contact Hrs.**
In this course, the student will be introduced to the electrical industry and the college program. The student will also be introduced to the tools and materials used in the trade.

ELE 101 DC Circuits and Measurements **1 Cr., 30 Contact Hrs.**
Calculate and measure voltage, current and resistance in series, parallel and combination circuits. Proper operation and use of test instruments. Laboratory fee required.

ELE 111 Residential Codes **1 Cr., 30 Contact Hrs.**
A study of the national electric code and local ordinances related to residential wiring. Laboratory fee required.

ELE 112 General Wiring Practices **4 Cr., 120 Contact Hrs.**
Prerequisite: BPR 177 or concurrent registration. Wiring practices used in residential wiring such as wire selection, splicing or wires, switches, receptacles and lighting circuits. Laboratory fee required.

ELE 113 Appliance Circuits **3 Cr., 90 Contact Hrs.**
Wiring practices used in appliance circuits, electric heating, central air conditioning, grounding practices and service entrances. Laboratory fee required.

ELE 114 Low Voltage Circuits **1 Cr., 30 Contact Hrs.**
Low voltage residential circuits including bells, chimes and alarms. Laboratory fee required.

ELE 121 Commercial Codes **1 Cr., 30 Contact Hrs.**
A study of the national electric code and local ordinances related to commercial wiring. Laboratory fee required.

ELE 122 Commercial Wiring **4 Cr., 120 Contact Hrs.**
Prerequisite: BPR 177 or concurrent enrollment. Commercial wiring practices including materials, conduit work, wire pulling and circuit layouts. Laboratory fee required.

ELE 123 Power Circuits **3 Cr., 90 Contact Hrs.**
Commercial wiring practices related to service entrance, breaker panels, commercial appliances and problems encountered in electrical construction work. Laboratory fee required.

ELE 202 Basic AC Circuits **2 Cr., 60 Contact Hrs.**
Prerequisite: Math 195 or concurrent enrollment. Reactance, impedance, phase angle, voltage, current and power calculations and measurements. Laboratory fee required.

ELE 203 Three-Phase Circuits **1 Cr., 30 Contact Hrs.**
Calculations and measurements related to three-phase wye and delta circuits. Laboratory fee required.

ELE 231 Motor Codes **1 Cr., 30 Contact Hrs.**
A study of the national electric code and local ordinances related to motors. Laboratory fee required.

ELE 232 DC and Single-Phase Machines **1 Cr., 30 Contact Hrs.**
Characteristics, connection and testing of DC motors and generators and single-phase motors. Laboratory fee required.

ELE 233 Three-Phase Motors **1 Cr., 30 Contact Hrs.**
Characteristics, connection and testing of three-phase motors. Laboratory fee required.

ELE 241 Control Circuit Diagrams **1 Cr., 30 Contact Hrs.**
Terminology, symbols and the development of control circuit diagrams. Laboratory fee required.

ELE 242 Magnetic Starting and Overload Protection **1 Cr., 30 Contact Hrs.**
Individual and multiple start-stop stations with overload protection. Laboratory fee required.

ELE 243 Jogging, Reversing and Sequencing **1 Cr., 30 Contact Hrs.**
Connecting and testing, jogging and reversing motor controls and sequencing circuits. Laboratory fee required.

ELE 244 Solid State Controls **1 Cr., 30 Contact Hrs.**
Connecting and testing transistor relay and SCR motor controllers. Laboratory fee required.

ELE 251 Transformer Types and Testing **1 Cr., 30 Contact Hrs.**
Basic transformer fundamentals, types of transformers and testing procedures. Laboratory fee required.

ELE 252 Distribution Transformers **2 Cr., 60 Contact Hrs.**
The selection, connection and testing of single-phase and three-phase distribution transformers. Laboratory fee required.

ELE 261 Residential Planning **2 Cr., 60 Contact Hrs.**
Plan the placing of receptacles, switches, lights and appliances; service entrance, material estimating and pricing. Laboratory fee required.

ELE 262 Commercial Planning **2 Cr., 60 Contact Hrs.**
Plan the wiring job for a church, school or other commercial building working from blueprints and specification books. Laboratory fee required.

ELE 703 (See Cooperative Work Experience) **3 Cr.**

ELE 704 (See Cooperative Work Experience) **4 Cr.**

ELE 713 (See Cooperative Work Experience) **3 Cr.**

ELE 714 (See Cooperative Work Experience) **4 Cr.**

ELE 803 (See Cooperative Work Experience) **3 Cr.**

ELE 804 (See Cooperative Work Experience) **4 Cr.**

ELE 813 (See Cooperative Work Experience) **3 Cr.**

ELE 814 (See Cooperative Work Experience) **4 Cr.**

Engineering

EGR 101 Engineering Analysis **2 Cr., 2 Lec.**
Prerequisite: Two years of high school algebra or Developmental Mathematics 093 or consent of instructor. The role of the engineer in society; branches and specialties in engineering; introduction to engineering analysis affording practice in analyzing and solving engineering problems; computational methods and devices with an introduction to computer programming.

EGR 105 Engineering Design Graphics **3 Cr., 2 Lec., 4 Lab.**
Provides the basic graphic fundamentals necessary for engineering communications and engineering design. Teaches standard engineering graphical techniques, auxiliaries, sections, graphical analysis, pictorial and working drawings in a framework which introduces the student to rational processes of creative engineering. Laboratory fee required.

EGR 106 Descriptive Geometry **3 Cr., 2 Lec., 4 Lab.**
Prerequisite: Drafting 183 or Engineering 105. Provides training in the visualization of three-dimensional structures and in accurately representing these structures in drawings by analyzing the true relationship between points, lines and planes. Attention is given to the generation and classification of lines and surfaces, as well as intersections, developments, auxiliaries and revolutions. Laboratory fee required.

EGR 107 Engineering Mechanics I **3 Cr., 3 Lec.**
Prerequisite: Mathematics 126 or registration therein. A study of the statics of particles and rigid bodies with vector mathematics in three-dimensional space. Principles of the equilibrium of forces and force systems, resultants, free body diagrams, friction, centroids and moments of inertia, virtual work and potential energy are used. Distributed forces, centers of gravity, analysis of structures, beams and cables are treated.

EGR 108 Computer Methods in Engineering **3 Cr., 3 Lec.**
Prerequisite: Mathematics 126 or registration therein. A study of fundamental methods of numerical analysis with applications by computer programming. Topics taught are computer programming, recursion formulas, successive approximations, error analysis, nonlinear equations, systems of linear equations and matrix methods, probabilistic models, interpolation, determination of parameters, numerical integration and solution of ordinary differential equations.

EGR 201 Engineering Mechanics II **3 Cr., 3 Lec.**
Prerequisites: Engineering 107, Mathematics 227, or registration therein. Dynamics — The study of constrained and general motions of particles and rigid bodies interacting with applied forces; space, time, mass, velocity, acceleration, work and energy, impulse and momentum.

EGR 202 Engineering Mechanics of Materials **3 Cr., 3 Lec.**
Prerequisites: Engineering 107, Mathematics 227, or registration therein. A study of forces, deformation and material properties of simple structural elements. Concepts of stress, strain and elastic properties are presented. Analysis of thin walled vessels, members loaded in tension, torsion, bending and shear, combined loadings and stability conditions are included. Behavioral phenomena such as fracture, fatigue and creep are introduced.

EGR 204 Electrical Systems Analysis **3 Cr., 3 Lec.**
Prerequisite: Mathematics 227 or registration therein. Introduction to electrical science; fundamental electrical systems and signals; basic concepts of electricity and magnetism with mathematical representation and computation.

English

ENG 101 Composition and Expository Reading **3 Cr., 3 Lec.**
A course designed to develop the student's skills in writing and in the critical analysis of prose. (This course is offered on campus and may be offered via television.)

ENG 102 Composition and Literature **3 Cr., 3 Lec.**
Prerequisite: English 101. Writing and reading activities in poetry, drama, the short story and the novel. Designed to increase the student's understanding and enjoyment of good literature. (This course is offered on campus and may be offered via television.)

ENG 201 British Literature **3 Cr., 3 Lec.**
Prerequisite: English 102. A study of significant works of British literature from the Old English Period through the Eighteenth Century.

ENG 202 British Literature **3 Cr., 3 Lec.**
Prerequisite: English 102. Study of important works from the Romantic Period to the present.

ENG 203 World Literature **3 Cr., 3 Lec.**
Prerequisite: English 102. Reading and analysis of significant continental European works from the Greek Classical Period through the Renaissance.

ENG 204 World Literature **3 Cr., 3 Lec.**
Prerequisite: English 102. Study of ten to twelve important post-Renaissance works of Continental Europe, English and America.

ENG 205 American Literature **3 Cr., 3 Lec.**
Prerequisite: English 102. Study of the works of the important writers before Whitman in the context of their times.

ENG 206 American Literature **3 Cr., 3 Lec.**
Prerequisite: English 102. Reading and analysis of representative works from Whitman to the present.

ENG 209 Creative Writing **3 Cr., 3 Lec.**
Prerequisite: English 102. Writing of fiction: short story, poetry and short drama.

ENG 210 Technical Writing **3 Cr., 3 Lec.**
Prerequisite: English 101 and 102; or Communications 131 and 132. Elective course. Introduction to the technical style of writing with emphasis on the writing of technical papers, reports, proposals, progress reports and descriptions.

ENG 215 Studies in Literature **3 Cr., 3 Lec.**
Prerequisite: English 102. The student will read, analyze and discuss selections in literature organized by genre, period or geographical region. Course titles and descriptions will be available each semester prior to registration. May be repeated for credit.

ENG 216 Studies in Literature **3 Cr., 3 Lec.**
Prerequisite: English 102. The student will read, analyze and discuss selections in literature organized by theme, interdisciplinary content or major author. Course titles and descriptions will be available each semester prior to registration. May be repeated for credit.

French

FR 101 Beginning French **4 Cr., 3 Lec., 2 Lab.**
Essentials of grammar, easy idiomatic prose, stress on pronunciation, comprehension and oral expression. Laboratory fee required.

FR 102 Beginning French **4 Cr., 3 Lec., 2 Lab.**
Prerequisite: French 101 or equivalent. Continuation of French 101 with emphasis on idiomatic language and complicated syntax. Laboratory fee required.

FR 201 Intermediate French **3 Cr., 3 Lec.**
Prerequisite: French 102 or equivalent. Reading, composition, grammar review and intense oral practice.

FR 202 Intermediate French **3 Cr., 3 Lec.**
Prerequisite: French 201 or equivalent. Continuation of French 201 with reading selections drawn more directly from contemporary literary sources. Composition.

FR 203 Introduction to French Literature **3 Cr., 3 Lec.**
Prerequisite: French 202 or consent of the instructor. Readings in French literature, history, culture, art and civilization.

FR 204 Introduction to French Literature **3 Cr., 3 Lec.**
Prerequisite: French 202 or consent of the instructor. Readings in French literature, history, culture, art and civilization.

Geography

GPY 101 Physical Geography **3 Cr., 3 Lec.**
A survey of the physical makeup of the earth: weather and climate, topography, plant and animal life, land and sea. Attention is directed toward the earth in space, use of maps and charts and place geography.

GPY 102 Economic Geography **3 Cr., 3 Lec.**
A study of the relation of man to his environment and his utilization of natural resources, dealing with problems of production, manufacture and distribution of goods throughout the world. The aspects of primitive subsistence and degree of commercialism are considered.

GPY 103 Cultural Geography **3 Cr., 3 Lec.**
Development of regional variations of culture, including the distribution of races, religions, languages and aspects of material culture, with emphasis on origins and diffusion.

Geology

GEO 101 Physical Geology **4 Cr., 3 Lec., 3 Lab.**
Study of earth materials and processes for science and non-science majors. Includes introduction to geochemistry, geophysics, examination of the earth's interior, magnetism, setting in space, minerals, rocks, structure and geologic processes. Laboratory fee required.

GEO 102 Historical Geology **4 Cr., 3 Lec., 3 Lab.**
Study of earth materials and processes within a time perspective. For science and non-science majors. Utilizes fossils, geologic maps and field studies to interpret geologic history. Laboratory fee required.

GEO 202 Introduction to Rock and Mineral Identification **3 Cr., 1 Lec., 3 Lab.**
Prerequisites: Geology 101 and Geology 102. This is an introductory course in crystallography, geochemistry, descriptive mineralogy, petrology and phase equilibria. The student will study crystal models and hand specimens in the laboratory as an aid to rock and mineral identification. Laboratory fee required.

Government

GVT 201 American Government **3 Cr., 3 Lec.**
Prerequisite: Sophomore standing recommended. An introduction to the study of political science; origin and development of constitutional democracy (United States and Texas); federalism and intergovernmental relations; local government; parties, politics and political behavior. Satisfies requirements for Texas State Teacher's Certification. (This course is offered on campus and may be offered via television.)

GVT 202 American Government **3 Cr., 3 Lec.**
Prerequisites: Government 201 and sophomore standing recommended. A study of the United States and Texas legislative process, the executive and the bureau structure, the judicial process, civil rights and liberties, domestic policies. Other topics include foreign relations and national defense. Satisfies requirements for Texas State Teacher's Certification. (This course is offered on campus and may be offered via television.)

GVT 205 Studies in Government **3 Cr., 3 Lec.**
Prerequisite: Sophomore standing and six hours of history or government. A treatment of selected topics in government. As topics change, course may be repeated once for credit.

History

HST 101 History of the United States **3 Cr., 3 Lec.**
A general presentation of United States history, commencing with the European background and first discoveries. The pattern of exploration, settlement and development of institutions is followed throughout the colonial period and the early national experience to 1877. (This course is offered on campus and may be offered via television.)

HST 102 History of the United States **3 Cr., 3 Lec.**
Prerequisite: History 101 recommended. A survey of the unfolding of United States history from the Reconstruction Era to the present day. The study includes social, economic and political aspects of American life and follows the development of the United States as a world power. (This course is offered on campus and may be offered via television.)

HST 105 Western Civilization **3 Cr., 3 Lec.**
A survey of the background for development of civilization in the west from ancient time through the Enlightenment; the Mediterranean

world including Greece and Rome; the Middle Ages and the beginning of modern history. Particular attention is paid to Renaissance, Reformation, the rise and the national state, the development of parliamentary government, and the influences of European colonization.

HST 106 Western Civilization **3 Cr., 3 Lec.**
The unfolding of the pattern of modern western civilization from the Enlightenment to current times. A study of the Age of Revolution and the beginning of industrialism; the nineteenth century and the social, economic and political factors of recent world history.

HST 204 American Minorities **3 Cr., 3 Lec.**
Prerequisites: Sociology 101 and/or six hours of U.S. history recommended. The principal minority groups in American society; their sociological significance and historic contributions. An emphasis will be placed on problems of intergroup relations, social movements and related social changes occurring on the contemporary American scene. The student may register for either History 204 or Sociology 204, but may receive credit for only one of the two.

HST 205 Studies in U.S. History **3 Cr., 3 Lec.**
Prerequisite: Sophomore standing and six hours of American history. A treatment of selected topics in the history of the United States. As topics change, course may be repeated once for credit.

Home Economics

HE 101 Basic Design **3 Cr., 2 Lec., 4 Lab.**
A study of the fundamental principles of art, design, and color as basis for developing originality and art appreciation in the home and in clothing. Laboratory experiences enhance the development of creative abilities by the application of the fundamental principles. This course is for students interested in home economics.

HE 102 Food Selection and Preparation **3 Cr., 2 Lec., 4 Lab.**
A study of basic nutrition involving the function and value of various foods and the factors related to food selection and preparation such as cost, availability, and time and methods required for preparation. Laboratory experiences relate the application of the fundamental principles of food selection, preparation and service to the problem of providing attractive, nutritious meals for the individual and family. Laboratory fee required.

HE 110 Clothing and Home Design **3 Cr., 2 Lec., 4 Lab.**
Prerequisite: Home Economics 101 or Art 101. The study and advanced application of color and design to the costume and in the home. Designed for students interested in home economics.

Human Development

HD 102 Orientation **1 Cr., 1 Lec.**
This is a course to help the student be successful in college. The student will make an individual contract with the instructor. Student experiences will include appropriate subject "Packages" such as "Improving Your Vocabulary", "How to Take Notes", "Study Skills", and "Listening Skills". Also, an evaluation session with a counselor is included. A "Package" may be made up of programmed materials, filmstrips, tapes, slides, seminars, learning activites, or other appropriate materials.

HD 104 Educational and Career Planning **3 Cr., 3 Lec.**
A course in human development designed to identify problem areas of concern to the student who is entering college for the first time and to develop approaches to problem solving in relation to educational and career decisions through the process of group counseling. Activities are planned to promote mature interpersonal involvement within the group, the college, and the community through an understanding of the causes and effects of one's own behavior in relation to himself and others.

HD 105 Basic Processes of Interpersonal Relationships **3 Cr., 3 Lec.**
A course in human development designed to explore interpersonal relations through a study of theory and concepts of small group processes and actual participation in the human experience. Students will be given an opportunity to participate in experiences planned to increase one's sensitivity to self and to others. A variety of activities is planned, partly by each class, designed to meet certain specific human needs of the students in the class.

HD 106 Personal and Social Growth **3 Cr., 3 Lec.**
A course which deals with human development from the standpoint of the interaction between a person and his society. Understanding of self, the influences of society contributing to the development of self and the success of the individual within a society are investigated. Adjustment to family, school and society is developed.

HD 107 Developing Leadership Behavior **3 Cr., 3 Lec.**
A course in human development designed to meet specific needs of students through participation in activities. The focus of this course will be on the development of group dynamics, leadership and human relations skills. Students will be required to participate in the management experience of planning, execution and evaluation of activities. The theoretical body of knowledge regarding leadership development and growth in group dynamics and management skills will be emphasized.

Humanities

HUM 101 Introduction to the Humanities **3 Cr., 3 Lec.**
Through an examination of interrelated examples of man's creative achievements, the humanities course attempts to enlarge awareness and increase understanding of the nature of man and the values of human life. (This course is offered on campus and may be offered via television. Laboratory fee required for television course.)

HUM 102 Advanced Humanities **3 Cr., 3 Lec.**
Prerequisite: Humanities 101 and/or permission of instructor. Humanities 102 is an in-depth and critical clarification of human value choices through the context of the humanities. It is designed to explore universal concerns such as man's relationship to himself and to others, the search for meaning, and man as a loving, believing and hating being as revealed by artists, playwrights, filmmakers, musicians, dancers, philosophers and theologians. The intent is to provide a sense of the commonality of human experience across cultures and civilizations and an understanding of the premises of which value choices are made.

Journalism

JN 101 Introduction to Mass Communications **3 Cr., 3 Lec.**
A survey course designed to provide students with a panoramic view of the field of mass communications and an understanding of the role of mass media in modern society. No restricted to journalism majors.

JN 102 News Gathering and Writing **3 Cr., 2 Lec., 3 Lab.**
Prerequisite: typing ability. Beginning reporting, study of types of news, leads, body treatment of story, feature in lead, facts, background and practice in writing straight news story. Required for all journalism majors.

JN 103 News Gathering and Writing **3 Cr., 2 Lec., 3 Lab.**
Prerequisite: Journalism 102. Required for all journalism majors. A continuation of Journalism 102. The writing of more complex types of news stories. Specialized writing in the fields of sports, police news, markets, finance, society, amusements, government and news of interest to women. Addition laboratory work on the student newspaper.

JN 104 Student Publications **1 Cr., 3 Lab.**
Individual staff assignments on the student newspaper in one of the following journalistic fields: writing, advertising, photography, cartooning, editing. Students are required to work at prescribed periods under supervision and must attend staff meetings. This course may not be taken for credit concurrently with Journalism 102 or 103. Credit limited to one unit per semester. May be repeated for a total of three units credit.

JN 105 Student Publications **1 Cr., 3 Lab.**
Individual staff assignments on the student newspaper in one of the following journalistic fields: writing, advertising, photography, cartooning, editing. Students are required to work at prescribed periods under supervision and must attend staff meetings. This course may not be taken for credit concurrently with Journalism 102 or 103. Credit limited to one unit per semester.

JN 201 Editorial and Feature Writing **3 Cr., 3 Lec.**
Prerequisites: 6 hours of journalism or consent of instructor. Emphasis is on handling of difficult news stories, editorial matter, and feature material. Research and interviewing techniques are emphasized with careful attention to development of feature stories for use in newspapers and magazines.

JN 202 Student Publications **1 Cr., 3 Lab.**
Prerequisite: Permission of instructor. Individual staff assignments on the student newspaper in one of the following journalistic fields: writing, advertising, photography, cartooning, editing. Students are required to work at prescribed periods under supervision and must attend staff meetings. This course may not be taken for credit concurrently with Journalism 102 or 103. Credit limited to one unit per semester.

JN 203 Student Publications **1 Cr., 3 Lab.**
Individual staff assignments on the student newspaper in one of the following journalistic fields: writing, advertising, photography, cartooning, editing. Students are required to work at prescribed periods under supervision and must attend staff meetings. This course may not be taken for credit concurrently with Journalism 102 or 103. Credit limited to one unit per semester.

JN 204 News Editing and Copy Reading **3 Cr., 3 Lec.**
Prerequisite: Journalism 102. A detailed course in editing news for presentation in the newspaper and on radio and television. Special emphasis on writing headlines and laying out pages.

Machine Transcription

Machine Transcription
(See Business 165 and 265)

Management
(See Business)

Mathematics

MTH 101 College Algebra **3 Cr., 3 Lec.**
Prerequsite: Two years of high school algebra or Developmental Mathematics 093. A study of functions and relations, absolute values, variation, quadratic equations, complex numbers, functions of two variables, systems of equations and inequalities, elementary aspects of the theory of equations, progressions, the binomial theorem and algebraic proof.

MTH 102 Plane Trigonometry **3 Cr., 3 Lec.**
Prerequisite: Mathematics 101 or equivalent. A study of angular measure, functions of angles, identities, solution of triangles, equations, inverse trigonometric functions, logarithms and complex numbers.

MTH 106 Elementary Functions and Coordinate Geometry III **5 Cr., 5 Lec.**
Prerequisites: Two years of high school algebra and one semester of trigonometry. A study of the algebra of functions to include the following: polynomial, rational, exponential, logarithmic and trigonometric functions, functions of two variables, complex numbers, vectors and analytic geometry to include conics, transformation of coordinates, polar coordinates, parametric equations and three dimensional space.

MTH 107 Fundamentals of Computing **3 Cr., 3 Lec.**
Prerequisite: Two years high school algebra or Developmental Mathematics 093. An introductory course designed primarily for students desiring credit toward a minor or major in computer science. The content of this course includes a study of algorithms and an introduction to a procedure-oriented language with general applications.

MTH 111 Mathematics for Business and Economics I **3 Cr., 3 Lec.**
Prerequisite: Two years of high school algebra or Developmental Mathematics 093. A study of equations, inequalities, matrices, linear programming and linear, quadratic, polynomial, rational, exponential and logarithmic functions. Applications to business and economic problems are emphasized.

MTH 112 Mathematics for Business and Economics II **3 Cr., 3 Lec.**
Prerequisite: Mathematics 111. Study of sequences and limits, differential calculus, integral calculus, optimization and appropriate applications.

MTH 115 College Mathematics I **3 Cr., 3 Lec.**
Prerequisites: One year of high school algebra and one year of high school geometry or two years of high school algebra or Developmental Mathematics 093. A course designed for liberal arts students which includes the study of logic, mathematical patterns, mathematical recreations, systems of numeration, mathematical systems, sets and statements and sets of numbers. Historical aspects of the above topics will also be emphasized.

MTH 116 College Mathematics II **3 Cr., 3 Lec.**
Prerequisite: Mathematics 115. A course designed for liberal arts students which includes the study of algebra, linear programming, permutations, combinations, probability and geometry. Historical aspects of the above topics will also be emphasized.

MTH 117 Fundamental Concepts of Mathematics for Elementary Teachers **3 Cr., 3 Lec.**
A study of the structure of the real number system, geometry and mathematical analysis with emphasis on the development of basic concepts in mathematical thinking needed for elementary teachers.

MTH 121 Analytic Geometry **3 Cr., 3 Lec.**
Prerequisite: Mathematics 102 or equivalent. A study of the real numbers, distance, the straight line, conics, transformation of coordinates, polar coordinates, parametric equations and three-dimensional space.

MTH 126 Introductory Calculus **5 Cr., 5 Lec.**
Prerequisite: Mathematics 105 or 106 or 121 or equivalent. A study of limits, continuity, derivatives, slopes, tangents, chain rule, implicit differentiation, higher derivatives, differentials, integration, applications of differential and integral calculus and trigonometric and inverse trigonometric functions.

MTH 130 Business Mathematics **3 Cr., 3 Lec.**
Prerequisite: One year of high school algebra or Developmental Mathematics 091 or the equivalent. A study of simple and compound interest, bank discount, payrolls, taxes, insurance, markup and markdown, corporate securities, depreciation and purchase discounts. This course is intended primarily for specialized occupational programs.

MTH 195 Technical Mathematics **3 Cr., 3 Lec.**
Prerequisite: Developmental Mathematics 091 or the equivalent. A course designed for technical students covering a general review of arithmetic; a treatment of the basic concepts and the fundamental facts of plane and solid geometry, computational techniques and devices, units and dimensions, a treatment of the terminology and concepts of elementary algebra, functions, coordinate systems, simultaneous equations, and stated problems.

MTH 202 Introductory Statistics **3 Cr., 3 Lec.**
Prerequisite: Two years of high school algebra or consent of instructor. A study of collection and tabulation of data, bar charts, graphs, sampling, measures of central tendency and variability, correlation, index numbers, statistical distributions, probability and applications to various fields.

MTH 207 FORTRAN Programming With Applications **3 Cr., 3 Lec.**
Prerequisites: Mathematics 107 or equivalent and Mathematics 101 or Mathematics 111 or Mathematics 104 or its equivalent. Study of FORTRAN language with emphasis on applications and programming of algorithmic language to solve numerical problems. Writing, testing and executing of typical FORTRAN programs will be stressed. Emphasis on applications for majors and minors in engineering, the sciences, mathematics or business.

MTH 209 Introductory APL Programming **3 Cr., 3 Lec.**
Prerequisites: Mathematics 101 or Mathematics 104 or Mathematics 111 and Mathematics 107 or consent of instructor. A study of APL language with emphasis on applications. This course is designed for partial fulfillment of degree requirements in computer science.

MTH 221 Linear Algebra **3 Cr., 3 Lec**
Prerequisite: Mathematics 126 or equivalent. A study of matrices, linear equations, dot products, cross products, geometrical vectors, determinants, N-dimensional space and linear transformation.

MTH 227 Mathematical Analysis I **4 Cr., 4 Lec.**
Prerequisite: Mathematics 126 or equivalent. A continued study of techniques of differentiation and integration. This will include logarithmic and exponential functions, parametric equations, polar coordinates, hyperbolic functions and vectors.

MTH 228 Mathematical Analysis II **3 Cr., 3 Lec.**
Prerequisite: Mathematics 227 or equivalent. A continued study of vectors, functions of several variables, partial derivatives, multiple integrals, indeterminate forms. Infinite series, and an introduction to differential equations.

MTH 230 Differential Equations **3 Cr., 3 Lec.**
Prerequisite: Mathematics 227 or consent of instructor. A study of ordinary differential equations. The course treats linear equations, systems of equations, equations with variable coefficients, existence and uniqueness of solutions, series solutions, singular points, transform methods, boundary value problems and applications.

Music

MUS 101 Freshman Theory **4 Cr., 3 Lec., 3 Lab.**
Development and cultivation of musicianship skills, especially in the areas of tonal and rhythmic perception and articulation. Presentation of the essential elements of music; introduction to sightsinging, keyboard, and notation.

MUS 102 Freshman Theory **4 Cr., 3 Lec., 3 Lab.**
Prerequisite: Music 101 or consent of instructor. Introduction to part-writing and harmonization with triads and their inversions; classification of chords; seventh chords, sightsinging, dictation and keyboard harmony.

MUS 104 Music Appreciation **3 Cr., 3 Lec.**
A concise survey of the basic elements of music and their application in the music literature of Western civilization, particularly from the Baroque to the present. Relevant cultural influences upon the music of each era are observed.

MUS 105 Italian Diction **1 Cr., 2 Lab.**
A study of the phonetic sounds of the Italian language, with selected vocabulary and little or no conversation. Primarily for voice majors.

MUS 106 French Diction **1 Cr., 2 Lab.**
A study of the phonetic sounds of the French language, with selected vocabulary and little or no conversation. Primarily for voice majors.

MUS 106 French Diction **1 Cr., 2 Lab.**
A study of the phonetic sounds of the French language, with selected vocabulary and little or no conversation. Primarily for voice majors.

MUS 107 German Diction **1 Cr., 2 Lab.**
A study of the phonetic sounds of the language, with selected vocabulary and little or no conversation. Primarily for voice majors.

MUS 110 Music Literature **3 Cr., 3 Lec.**
A course dealing with the characteristics of sound, the elements of music, performance media and musical texture as seen in the music of recognized composers in the major periods of music history. Special emphasis is given to the music of the late Gothic, Renaissance and Baroque eras.

MUS 111 Music Literature **3 Cr., 3 Lec.**
Prerequisite: Music 110. A continuation of the studies introduced in Music 110. A study of the compositional procedures and forms employed by the creators of music. Attention is focused upon the music of the classical, romantic and modern periods.

MUS 113 Foundations in Music I **3 Cr., 3 Lec.**
Emphasis upon participation and the necessary skills for satisfactory performance in singing, playing an instrument, listening, creating rhythmic response. Development of increasing ability to manage notation (music reading).

MUS 114 Foundations in Music II **3 Cr., 3 Lec.**
Prerequisite: Music 113. Designed to help prepare students with limited music training for Music 101 or to further their general music understanding. Course emphasis will include rhythmic and melodic training, understanding of basic chord functions, melody, textures and basic analysis of music.

MUS 115 Jazz Improvisation **2 Cr., 1 Lec., 2 Lab.**
An introduction to the art of improvisation. A presentation of basic materials, aural training, analysis, and a study of common practices stylistically so as to provide a foundation for the beginning improviser. May be repeated for credit.

MUS 117 Piano Class I **1 Cr., 2 Lab.**
Class instruction in the areas of basic musicianship and piano skills designed primarily for those with no knowledge in piano skills. Open to all students. May be repeated for credit.

MUS 118 Piano Class II **1 Cr., 2 Lab.**
Includes techniques, skills, harmonization, transposition, improvisation, accompanying, sightreading and performing various styles of repertoire. Open to all students. May be repeated for credit.

MUS 119 Guitar Class I **1 Cr., 2 Lab.**
Class instruction covering the basics of guitar skill, designed primarily for those with limited knowledge in the reading of music or playing the guitar. Open to all students. May be repeated for credit.

MUS 120 Guitar Class II **1 Cr., 2 Lab.**
Prerequisite: Music 119 or the equivalent. A continuation of the skills introduced in Music 119 with emphasis on perfecting classical guitar techniques and music reading skills. May be repeated for credit.

Applied Music

Applied Music
Subject to enrollment, students may receive private instruction in the following courses: piano, organ, voice, violin, viola, cello, double bass, flute, oboe, clarinet, bassoon, saxophone, trumpet, French horn, trombone, baritone, tuba, percussion, guitar, electric bass and drum set. Private music may be repeated for credit.

MUS 121-143 Applied Music — Minor **1 Cr., 1 Lec.**
Private instruction in the student's secondary area. One half hour lesson a week. Open to students registered in music theory, ensembles and other music major or minor courses. Fee required. Private music may be repeated for credit.

MUS 221-243 Applied Music — Concentration **2 Cr., 1 Lec.**
Private instruction in the area of the student's concentration. Two half hour lessons a week. Open to students registered in music theory, ensembles and other music major or minor courses. Fee required. Private music may be repeated for credit.

MUS 251-270 Applied Music — Major **3 Cr., 1 Lec.**
Private instruction in the area of the student's major instrument. Primarily for music performance majors. Two half hour lessons a week. Open to students registered in music theory, ensembles and other music major or minor courses. Fee required.

MUS 150 Chorus **1 Cr., 3 Lab.**
Prerequisite: Consent of instructor. Open to all students of the college, the chorus studies and performs a wide variety of music representing the literature of the great eras of music history. May be repeated for credit.

MUS 151 Voice Class I **1 Cr., 2 Lab.**
A course teaching the principles of breathing, voice production, tone control, enunciation and phrasing. Two group lessons a week. Open to all non-voice majors. May be repeated for credit.

MUS 152 Voice Class II **1 Cr., 2 Lab.**
A continuation of Music 151 with emphasis on solo singing, appearance in studio recital, stage department and personality development. Open to all non-voice majors. Two group lessons a week. May be repeated for credit.

MUS 155 Vocal Ensemble **1 Cr.; 3 Lab.**
A select group for mixed voices concentrating upon excellence of performance. Membership is open to any student by audition, who, in the opinion of the director, possesses special interest and skills in performance of advanced choral literature. May be repeated for credit.

MUS 160 Band **1 Cr., 3 Lab.**
Prerequisite: non-wind instrument majors, consent of the instructor. The band studies and performs a wide variety of music in all areas of band literature. Required of all wind instrument majors. May be repeated for credit.

MUS 171 Woodwind Ensemble **1 Cr., 3 Lab.**
Select group of instrumentalists offering experience in the reading and performance of literature for small ensembles. Membership through audition with the appropriate director. May be repeated for credit.

MUS 172 Brass Ensemble **1 Cr., 3 Lab.**
Select group of instrumentalists offering experience in the reading and performing of literature for small ensembles. Membership through audition with the appropriate director. May be repeated for credit.

MUS 173 Percussion Ensemble **1 Cr., 3 Lab.**
Select group of instrumentalists offering experience in the reading and performing of literature for small ensembles. Membership through audition with the appropriate director. May be repeated for credit.

MUS 174 Keyboard Ensemble **1 Cr., 3 Lab.**
Select group of instrumentalists offering experience in the reading and performing of literature for small ensembles. Membership through audition with the appropriate director. May be repeated for credit.

MUS 185 Stage Band **1 Cr., 3 Lab.**
Prerequisite: consent of instructor. The stage band studies and performs a wide variety of music with emphasis on the jazz-oriented big-band styles of the 1960's. May be repeated for credit.

MUS 199 Recital **1 Cr., 2 Lab.**
One period per week designed to allow students of private lessons an opportunity to perform before an audience. Required for all music majors and open to all other students. Credit for this course does not apply to the associate degree. May be repeated for credit.

MUS 201 Sophomore Theory **4 Cr., 3 Lec., 3 Lab.**
Prerequisite: Music 101-102 or consent of instructor. A continuation of freshman theory, including a study of larger forms, thematic development, chromatic chords including the neapolitan sixth and augmented sixth chords, diatonic seventh chords with advanced sightsinging, keyboard harmony and ear training.

MUS 202 Sophomore Theory **4 Cr., 3 Lec., 3 Lab.**
Prerequisite: Music 201 or equivalent or by consent of instructor. A continuation of Music 201, including a study of sonata-allegro form, ninth, eleventh and thirteenth chords, exploration of new key schemes, impressionism, melody, harmony, tonality and formal processes as they apply to twentieth century music with a comparable advance in sightsinging, keyboard harmony and ear training.

MUS 202 Composition **3 Cr., 3 Lec.**
Prerequisite: Music 101 and 102. Composing in small forms for simple media in both traditional styles and styles of the student's choice. May be repeated for credit.

Optical Technology

OPT 101 Ophthalmic Materials **3 Cr., 3 Lec.**
The history and development of glass and plastic. Basic optical terminology; ophthalmic lens types; calculating lens curvature, powers, thickness, prisms, and adaptation of lenses in the opticianary. Use of optical charts and graphs.

OPT 102 Ophthalmic Grinding & Polishing **3 Cr., 2 Lec., 2 Lab.**
The function of optical lens grinding and lens polishing machines. Computation for grinding lenses; use of optical tools and gauges; methods for laying out and marking single vision and multifocal lens blanks, practice of grinding and polishing spherical and cylindrical surfaces; operation of the lens generating machine. Laboratory fee required.

OPT 103 Optical Lens Design & Measurements **3 Cr., 3 Lec.**
Theory of lens design and their use in correcting visual deficiencies in conformity with the refractionist's prescription. Spectacle frame measurements and sizes; methods used to prepare lenses prior to edging; principle and study of neutralization and duplication of lenses by use of the lensometer/vertometer; optical standards and tolerances.

OPT 104 Optical Lens & Frame Selection **3 Cr., 2 Lec., 2 Lab.**
Preparing laboratory orders prior to edging lenses. Practice in neutralizing and duplicating ophthalmic lenses by means of the vertometer/lensometer; identification of spectacle frames and patterns; selection of proper tools and lens blanks, practice in hand edging and fitting spherical lenses into plastic and metal frames. Laboratory fee required.

OPT 205 Anatomy & Physiology of The Eye **3 Cr., 3 Lec.**
Study of the anatomy of the eye and its structures, such as the lid, cornea, lens, and retina. Refractive errors and their correction; accommodation and convergence; presbyopia and aphakia; common eye diseases; binocular vision and eye muscle imbalances.

OPT 206 Introduction to Contact Lenses **3 Cr., 3 Lec.**
History of contact lenses; theory and basic design of contact lenses; fundamental fitting rules and techniques; fluorescein patterns and evaluation of the fit of contact lenses; keratometer fitting procedure.

OPT 207 Bifocals & Trifocals Lenses **3 Cr., 2 Lec., 2 Lab.**
Cutting and fitting of bifocals and trifocals into plastic and metal frames; techniques for handling plastic lenses; drilling and mounting of rimless glasses; reconstruction and neutralization of lenses and glasses to analyze and duplicate unknown eyeglass prescriptions. Laboratory fee required.

OPT 208 Ophthalmic Laboratory Equipment **3 Cr., 2 Lec., 2 Lab.**
Operation of automatic edging and blocking equipment; interpretation and analysis of shop orders; preparation of compound lenses and creation of prism through decentration to fit prescription specification; operation of lens-hardening machines; minor repairs to frames and temples, and soldering of metal frames. Laboratory fee required.

OPT 209 Ophthalmic Dispensing Ethics **3 Cr., 3 Lec.**
Ethics, practices, and responsibilities of the ophthalmic worker. Determination of patient needs; prescription analysis and interpretation of single vision, multifocal, and prism lenses; considerations in making glasses for occupational use; tinted lenses and their uses.

OPT 210 Ophthalmic Fitting **3 Cr., 3 Lec.**
Psychology of dispensing; study of style and fashion eyewear; visual problems of the aphakic patient. Considerations of illumination, size of type, and working distance on visual performance.

OPT 211 Optic Principles **3 Cr., 3 Lec.**
This course examines vibrations, properties of waves, wave motion, geometric and physical optics, Hugen's principle, Young's double-split experiment and optical instruments. Selected laboratory experiments are used to help develop concepts.

OPT 212 Ophthalmic Measurement **3 Cr., 2 Lec., 2 Lab.**
Taking ocular measurements; use of various measuring instruments; principle and techniques of skillful fitting and adjusting of spectacles by means of optical pliers and other equipment; evaluation of completed spectacles for accuracy and quality. Laboratory fee required.

OPT 213 Dispensing Occupational Eyewear **3 Cr., 2 Lec., 2 Lab.**
Dispensing procedures relating to bifocals and complex prescrip-

tions. Techniques of fitting and adjusting plastic, metal, and rimless spectacles and occupational eyewear; visual aids for patients with subnormal vision; demonstration of magnifiers, loupes, and projection devices. Laboratory fee required.

OPT 703 (See Cooperative Work Experience) **3 Cr.**

OPT 713 (See Cooperative Work Experience) **3 Cr.**

OPT 803 (See Cooperative Work Experience) **3 Cr.**

OPT 813 (See Cooperative Work Experience) **3 Cr.**

Philosophy

PHI 102 Introduction to Philosophy **3 Cr., 3 Lec.**
A survey course designed to acquaint the student with some of the fundamental problems in philosophy and with methods used to deal with them. Some principle views, both ancient and modern, are examined as possible solutions.

PHI 105 Logic **3 Cr., 3 Lec.**
An analysis of the principles of logical thinking. An effort is made to apply logic's methods and tools to real life situations. Fallacies, definitions, analogies, syllogisms, venn diagrams and other topics are discussed.

PHI 202 Introduction to Social and Political Philosophy **3 Cr., 3 Lec.**
An examination of the relationships of philosophical ideas to the community with emphasis on concepts of natural rights, justice, education, freedom and responsibility.

PHI 203 Ethics **3 Cr., 3 Lec.**
A survey of the classical and modern theories of the moral nature of man, posing alternative views of his responsibilities to self and society. The course is designed to vivify the ethical issues and their metaphysical and epistemological bases so as to assist the student toward sound application of ethical principles in his own life.

PHI 207 History of Ancient Philosophy **3 Cr., 3 Lec.**
This course is a historical examination of philosophy from presocratic times to the Renaissance. Connections between the presocratics, Plato, and Aristotle will be drawn. Stoicism, epicureanism and scholasticism will be considered.

PHI 208 History of Modern Philosophy **3 Cr., 3 Lec.**
Starting with the Renaissance, it examines Western philosophic thought through the 19th century. Special emphasis will be given continental rationalism, British empiricism, Kantian metaphysics and epistemology and the Hegelian system as it is related to 20th century philosophies. Emphasis will be placed on the historical relationship existing between these schools of thought.

PHI 210 Studies in Philosophy **3 Cr., 3 Lec.**
Prerequisite: three hours of philosophy and consent of the instructor.
Students will study a philosophical problem, movement, or special topic. Course topic will change each semester and may be repeated for credit.

Photography

PHO 110 Introduction to Photography and Photo-Journalism **3 Cr., 2 Lec., 4 Lab.**
Introduction to photography and photojournalism. The general mechanics of camera lenses and shutters, general characteristics of the photographic films, papers and chemicals. Proper photographic darkroom procedures including enlarging, processing, contact printing and exposing of photographic films and papers. Study of artificial lighting. Laboratory fee required.

PHO 111 Advanced Photography and Photo-Journalism **3 Cr., 2 Lec., 4 Lab.**
Advanced photography and photojournalism. Utilization of everything taught in 110, with emphasis on refining techniques. Special emphasis on photographic communication. Laboratory fee required.

PHO 120 Commercial Photography I **4 Cr., 3 Lec., 3 Lab.**
Commercial or contract photography including field, studio and darkroom experience associated with social photography, portraiture and studio photography, fashion and theatrical portfolio and publicity photography and convention photography. Includes use of natural, stationary, flash and strobe artificial lights. Laboratory fee required.

PHO 121 Commercial Photography II **4 Cr., 3 Lec., 3 Lab.**
Further commercial or contract assignments including publicity photography, architectural photography, interior photography and produce advertising photography. Advanced exploration in latest equipment, papers, films, print and presentation techniques. Additional exchange with sample clients, employers studios and agencies. Laboratory fee required.

Physical Education Activity Courses

Physical Education Activity Courses
One of the main objectives of the Physical Education Division is to provide the opportunity for each student to become skilled in at least one physical activity which will prepare him for personal enjoyment of leisure time. Students are urged to take advantage of the program by registering for a physical education activity course each semester.

PEH 100 Lifetime Sports Activities **1 Cr., 3 Lab.**
Students are provided an opportunity for participation and instruction in various lifetime sports. Selection may be made from archery, badminton, bowling, golf, handball, racquetball, softball, swimming, tennis and other sports. Activities may be offered singularly or in combinations. Instruction shall be presented at the beginner and advanced-beginner levels. The course is designed for male and female students and may be repeated for credit providing students select different activities. Laboratory fee required.

PEH 104 Touch Football/Soccer **1 Cr., 2 Lab.**
A course designed for those students desiring instruction and skill development in touch football and soccer. Uniform required. Laboratory fee required.

PEH 112 Softball and Soccer **1 Cr., 2 Lab.**
Designed to provide the student an opportunity for instruction and participation in softball and soccer. Uniform required. Laboratory fee required.

PEH 115 Physical Fitness **1 Cr., 3 Lab.**
This course is designed to diagnose and measure the student's physical condition and prescribe a program of exercise to carry with him through life. Much of the course work will be carried on in the physical performance laboratory. Co-educational. May be repeated for credit. Uniform required. Laboratory fee required.

PEH 118 Beginning Golf **1 Cr., 2 Lab.**
A co-educational course in beginning golf. Equipment furnished. No uniform required. Laboratory fee required.

PEH 119 Beginning Tennis **1 Cr., 2 Lab.**
A co-educational course designed for the beginner. Basic tennis fundamentals will be stressed. Uniform required. Laboratory fee required.

PEH 121 Folk Dance **1 Cr., 2 Lab.**
Participation in a variety of folk dances from other lands. Cultural backgrounds and costume study is included as a part of the course. Laboratory fee required. No uniform required.

PEH 122 Beginning Gymnastics **1 Cr., 2 Lab.**
A co-educational course in beginning gymnastics, emphasizing basic skills in tumbling and in the various apparatus events. Uniform required. Laboratory fee required.

PEH 123 Beginning Swimming **1 Cr., 2 Lab.**
A co-educational course designed to teach a non-swimmer to survive in the water. Uniform required. Laboratory fee required.

PEH 124 Social Dance **1 Cr., 2 Lab.**
Students who have limited experience in dance will find this course beneficial. Ballroom and social dance includes fundamental steps and rhythms of the fox-trot, waltz, tango, and recent dance steps. "Country" dancing includes reel, square dance, and other related dances. No uniform required. Laboratory fee required.

PEH 125 Conditioning Exercise **1 Cr., 3 Lab.**
Enables the student to develop an understanding of exercise and its effect on the body and improve physical fitness through a variety of conditioning activities. Uniform required. Laboratory fee required.

PEH 127 Basketball and Volleyball **1 Cr., 2 Lab.**
Techniques, rules and strategy of the game will be taught and the emphasis will be on playing the game. Uniform required. Laboratory fee required.

PEH 128 Social and Folk Dance **1 Cr., 2 Lab.**
A co-educational, beginning class in social and folk dance. No uniform required. Laboratory fee required.

PEH 131 Weight Training and Conditioning **1 Cr., 3 Lab.**
A course designed for those students who desire instruction and participation in weight training and conditioning techniques. May be repeated for credit. Uniform required. Laboratory fee required.

PEH 134 Outdoor Education **1 Cr., 3 Lab.**
A co-educational course designed to provide students with the opportunity to gain knowledge and skills in outdoor education and camping activities through planned and incidental experiences. Including a week end camp-out. No uniform required. Laboratory fee required.

PEH 218 Intermediate Golf **1 Cr., 2 Lab.**
Prerequisite: Permission of instructor. A course designed to develop skills and techniques beyond the "beginner" stage. Laboratory fee required.

PEH 219 Intermediate Tennis **1 Cr., 2 Lab.**
Prerequisite: Permission of instructor. A course designed to develop skills and techniques beyond the "beginner" stage. Uniform required. Laboratory fee required.

PEH 222 Intermediate Gymnastics **1 Cr., 2 Lab.**
Prerequisite: Physical Education 122. A course designed to develop skills and techniques beyond the "beginner" stage. Uniform required. Laboratory fee required.

Physical Education Non-Activity Courses

PEH 101 Fundamentals of Health **3 Cr., 3 Lec.**
A study of personal and community health. Emphasis placed on causative factors of mental and physical health and the means of disease transmission and prevention. For majors, minors, and students with specific interest.

PEH 109 Outdoor Recreation **3 Cr., 3 Lec.**
A study of the development and trends of outdoor recreation and organized camping.

PEH 110 Community Recreation **3 Cr., 3 Lec.**
Principles, organization and the function of recreation in American society. Designed for students planning a major or minor in health, physical education or recreation.

PEH 144 Introduction to Physical Education **3 Cr., 3 Lec.**
Designed for professional orientation in physical education, health and recreation. Brief history, philosophy and modern trends of physical education, teacher qualification, vocational opportunities, expected competencies and skill testing comprise the contents of the course. For students majoring in physical education.

PEH 147 Sports Officiating I **3 Cr., 2 Lec., 2 Lab.**
This course is especially designed for those students who would like to choose sports officiating for an avocation and/or to increase knowledge in and appreciation of sports. Sports covered in this course will be football and basketball. As part of the course requirement, students will be expected to officiate intramural games.

PEH 148 Sports Officiating II **3 Cr., 2 Lec., 2 Officiating**
This course is especially designed for those students who would like to choose sports officiating for an avocation and/or to increase knowledge in and appreciation of sports. Sports covered in this course will be softball, track and field and baseball.

PEH 257 Advanced First Aid and Emergency Care **3 Cr., 3 Lec.**
The theory and practice in the advanced first aid and emergency care course of the American Red Cross. The course will also include various aspects of safety education.

Physical Science

PSC 118 Physical Science **4 Cr., 3 Lec., 2 Lab.**
A study of the basic principles and concepts of physics, chemistry and nuclear science. The course relates these basic sciences to man's physical world at an introductory level. This course is intended primarily for the non-science major. Laboratory fee required.

PSC 119 Physical Science **4 Cr., 3 Lec., 2 Lab.**
The course encompasses the interaction of the earth sciences and man's physical world, geology, astronomy, meteorology and space science are emphasized through the application of selected principles and concepts of the applied sciences. The course is directed toward the non-science major. Laboratory fee required.

Physics

PHY III Introductory General Physics **4 Cr., 3 Lec., 3 Lab.**
Prerequisite: Two years high school algebra, including trigonometry or equivalent. The first semester of a two semester course designed for pre-dental, biology, pre-medical, pre-pharmacy, and pre-architecture majors and other students who require a two-semester technical course in physics. This course includes a study of mechanics and heat. Laboratory includes one hour problem session. Laboratory fee required.

PHY 112 Introductory General Physics **4 Cr., 3 Lec., 3 Lab.**
Prereqisite: Physics 111. A continuation of Physics 111 which includes the study of electricity, magnetism, light, and sound. Laboratory includes one hour problem session. Laboratory fee required.

PHY 117 Concepts in Physics **4 Cr., 3 Lec., 3 Lab.**
An essentially non-mathematical introduction to the principles of physics intended to satisfy laboratory science requirements for the non-science major. Emphasis is placed on the historical developments

of classical mechanics and thermodynamics, and the effects discoveries in these areas have on day to day experiences. Especially emphasized is the principle of conservation of energy, and the current difficulties encountered in solving the pressing problems of worldwide energy production. Laboratory fee required.

PHY 118 Concepts in Physics **4 Cr., 3 Lec., 3 Lab.**
An essentialy non-mathematical introduction to the principles of physics intended to satisfy laboratory science requirements for the non-science major. Emphasis is placed on modern developments in physics, and the effects these discoveries have on present day problems. Course content is purposely made flexible to permit discussion of new developments in physics. The course is structured around topics in acoustics, electricity and magnetism light and the electromagnetic spectrum, atomic physics, and relativity. Laboratory fee required.

PHY 131 Applied Physics **4 Cr., 3 Lec., 3 Lab.**
Prerequisite: Mathematics 195 or concurrent enrollment in Mathematics 195. The first half of a one year course designed to explain the basic concepts of the properties of matter, mechanics, and heat. Emphasis will be placed on applications and problem solving. Designed primarily for students enrolled in technical programs. Laboratory fee required.

PHY 132 Applied Physics **4 Cr., 3 Lec., 3 Lab.**
Prerequisite: Physics 131. A continuation of Physics 131 designed to explain basic concepts in the areas of sound, light, electricity, magnetism and atomic theory. Laboratory fee required.

PHY 201 General Physics **4 Cr., 3 Lec., 3 Lab.**
Prerequisite: Credit or concurrent registration in Mathematics 126. Principles and applications of mechanics, wave motion, and sound emphasizing fundamental concepts, problem solving, notation, and units. Designed primarily for physics, chemistry, mathematics and engineering majors. Laboratory includes a one hour problem session. Laboratory fee required.

PHY 202 General Physics **4 Cr., 3 Lec., 3 Lab.**
Prerequisites: Physics 201 and credit or concurrent registration in Mathematics 227. Principles and applications of heat, electricity, magnetism and optics emphasizing fundamentals, concepts, problem solving, notation and units. Laboratory includes a one hour problem session. Laboratory fee required.

Psychology

PSY 103 Sex Roles in American Society **3 Cr., 3 Lec.**
A study of the physiological, psychological and sociological aspects of human sexuality. The student may register for either Psychology 103 or Sociology 103, but may receive credit for only one of the two.

PSY 105 Introduction to Psychology **3 Cr., 3 Lec.**
A study of basic problems and principles of human experience and behavior; such areas as heredity and environment, the nervous system, motivation, learning, emotions, thinking and intelligence are included. (This course is offered on campus and may be offered via television.)

PSY 131 Human Relations **3 Cr., 3 Lec.**
A study involving the direct application of psychological principles to human relations problems in business and industry. Consideration is given to group dynamics and adjustment factors related to employment and advancement. The presentation will be tailored to fit the needs of the students enrolled in each section.

PSY 201 Developmental Psychology **3 Cr., 3 Lec.**
Prerequisite: Psychology 105. A study of human growth, development and behavior, emphasizing the psychological changes which occur during the life pattern. The processes of life from prenatal beginnings

to adulthood are treated in an integrated manner. Due attention is given to aging and its place in the developmental sequence. (This course is offered on campus and may be offerd via television.)

PSY 202 Applied Psychology **3 Cr., 3 Lec.**
Prerequisite: Psychology 105. A course designed for the application of psychological facts and principles to problems and activities of life. Special emphasis will be placed on observing, recording and modifying human behavior. Some off-campus work may be required.

PSY 205 Psychology of Personality **3 Cr., 3 Lec.**
Prerequisite: Psychology 105. A consideration of the important factors involved in successful human adjustment including child-parent relationships, adolescence, anxiety states, mechanisms of defense and psychotherapeutic concepts. The course includes a survey of methods of personality measurement.

PSY 207 Social Psychology **3 Cr., 3 Lec.**
Prerequisite: Psychology 105 and/or Sociology 101. A survey of the research and theories dealing with individual behavior in the social environment. Topics include sociopsychological process, attitude formation and change, interpersonal relations, and group processes. The student may register for either Psychology 207 or Sociology 207, but may receive credit for only one of the two.

PSY 210 Selected Topics in Psychology **3 Cr., 3 Lec.**
Prerequisite: Psychology 105. An elective course designed to deal with specific topics in psychology. Examples of topics might include "Adult Development," "Adolescent Psychology," "Behavioral Research." Course may be repeated once for credit.

Reading

RD 101 Effective College Reading **3 Cr., 3 Lec.**
Reading 101 emphasizes comprehension techniques in reading fiction and non-fiction. Improved critical reading skills including analysis, critique and evaluation of written material are explored. Reading comprehension and flexibility of reading rate are stressed. In addition, advanced learning techniques in listening, note-taking, underlining, concentration and reading in specialized academic areas are developed.

RD 102 Speed Reading/Learning **3 Cr., 3 Lec.**
This course emphasizes improved critical reading/learning skills utilizing an aggressive, dynamic approach. Reading comprehension is stressed using speed reading techniques. Learning and memory depth skills are taught. Offered in a laboratory setting.

Real Estate

RE 130 Real Estate Principles **3 Cr., 3 Lec.**
Fundamental principles covering the broad subject of real estate together with real estate law and operating procedures applicable to the state of Texas. This course of study shall include but not be limited to the following: arithmetical calculations as used in real estate transactions; rudimentary principles of conveyancing; the general purposes and effect of deeds, deeds of trust, mortgages, land contracts of sales, leases, liens, and listing contracts; elementary principles of land economics and appraisals; fundamentals of obligations between principal and agent; principles of real estate practice and canons of ethics pertaining thereto; and the provisions of this act and rules and regulations of the commission.

RE 131 Real Estate Finance **3 Cr., 3 Lec.**
Prerequisites: Credit in or concurrent enrollment in Real Estate 130. Procedures in financing real estate sales, obtaining funds, legal aspects of mortgages and related instruments. Also problems and cases in real estate finance.

RE 133 Real Estate Marketing **3 Cr., 3 Lec.**
Prerequisites: Real Estate 130, 131, 136. A study of the principles and techniques of marketing in the field of real estate. Emphasizing pro-

fessional procedures used in real property transactions to the satisfaction of all parties concerned. Also an analysis of the agency relationship between the agent and principal, product knowledge, prospective markets, customer prospecting, planning the sales presentation, meeting the prospect, the interview, overcoming sales resistance, closing the sale and building goodwill. Practical application provided through use of case studies, and preparing listing and sales contracts.

RE 135 Real Estate Appraisal **3 Cr., 3 Lec.**
Prerequisite: Real Estate 130, 131, and 133. Principles and methods of appraisal generally used in establishing the market value of real estate along with the knowledge and skills necessary for application or interpretation.

RE 136 Real Estate Law **3 Cr., 3 Lec.**
Prerequisite: Real Estate 130 or consent of instructor. Emphasizes the more complex aspects of real estate law as encountered by those concerned with real estate transactions. Practical application relating to ownership, use and transfer of real property, enforceability of contractual right, and the impact of litigation affecting title to real property.

RE 230 Real Estate Office Management **3 Cr., 3 Lec.**
Prerequisite: Real Estate 130, 131, 133, 135, 136 or the consent of the instructor. Overall management procedures of operating a real estate office. In-depth study of office procedures, relations, communications, and ethics.

RE 233 Commercial and Investment Real Estate **3 Cr., 3 Lec.**
Prerequisites: Real Estate 130, 131, 133, 135, 136 or instructor's approval. Basic insight into commercial and investment real estate, including syndication, "joint venture" of group ownership of real estate, selection, financing, and management of the investor.

RE 235 Property Management **3 Cr., 3 Lec.**
Prerequisites: Real Estate 130, 131, 133, 135, 136 or instructor's approval. Basic management techniques on how to attract and keep tenants and maintain property while obtaining the highest level of income; developing—executing—evaluation; legal aspects; property analysis; location factors; employee relations; market, income and expense analysis; maintenance and housekeeping; tenant credits and collections; management of various kinds of real estate including single and multi-family, retail and commercial properties.

RE 250 Real Estate Internship I **4 Cr., 20 Lab.**
Prerequisite: Real Estate 130, 131, 133 and concurrent enrollment in Real Estate 254. Must submit application to instructor, be interviewed and approved prior to registration. Internship training and application of principles and skills. Under supervision of the employer/sponsor and a member of the real estate faculty. Job-related studies and independent research.

RE 251 Real Estate Internship II **4 Cr., 20 Lab.**
Prerequisite: Real Estate 130, 131, Real Estate Marketing and concurrent enrollment in Real Estate 255. Must submit application to instructor, be interviewed and approved prior to registration. Internship training and application of principles and skills in student's chosen field. Under supervision of the employer/sponsor and a member of the real estate faculty. Job-related studies and independent research.

RE 254 Real Estate Seminar I **2 Cr., 2 Lec.**
Prerequisite: Real Estate 130, 131, Real Estate Marketing and concurrent enrollment in Real Estate 250 and preliminary interview by real estate faculty. Problem analysis and project development for students majoring in real estate. Individual and group study of a particular area on problem beyond the scope of regularly offered courses

RE 255 Real Estate Seminar II **2 Cr., 2 Lec.**
Prerequisite: Real Estate 130, 131, Real Estate marketing and concurrent enrollment in Real Estate 251 and preliminary interview by real estate faculty. Business strategy and the decision making process applied to trends in the real estate profession. Specific emphasis will be placed upon the application of the intern's course knowledge and work experiences.

Religion

REL 101 Religion in American Culture **3 Cr., 3 Lec.**
This course deals with the nature of religion as it is practiced in America. It covers some of the important influences from the past and the characteristics of current religious groups and movements. Students in this course attempt to understand the role of religion in American life.

REL 102 Contemporary Religious Problems **3 Cr., 3 Lec.**
Deals with both classic and recent issues such as the nature of religion itself, the existence of God, the encounter of world religions, mysticism, sexuality and religion and the interpretation of death. Sometimes offered with emphasis on a limited topic such as death and dying.

REL 201 Major World Religions **3 Cr., 3 Lec.**
This course surveys the major world religions such as Hinduism, Buddhism, Judaism, Islam, and Christianity. It includes a study of historical background, but the major emphasis is on present day beliefs. Some time may be devoted to topics such as the nature of religion, tribal religion, and alternatives to religion.

Secretarial Training

Secretarial Training

(See Business 162)

Shorthand

Shorthand

(See Business 159, 166, 266)

Social Science

SS 131 American Civilization **3 Cr., 3 Lec.**
A course designed to provide an introductory survey of the psychological, historical/sociocultural, and political/economic theories and institutions of modern society. Both the nature of man and the relationships of the individual within the cultural framework are examined. Emphasis is placed on the national, state, and local experiences which affect daily life.

SS 132 American Civilization **3 Cr., 3 Lec.**
Prerequisite: Social Science 131. A course designed to provide topical studies of the psychological, historical/sociocultural, and political/economic theories and institutions of modern society. Emphasis is placed on analysis and application of theory to life experiences.

Sociology

SOC 101 Introduction to Sociology **3 Cr., 3 Lec.**
An inquiry into the nature of society and the foundations of group life, including institutions, with a broad presentation of the basis of social change, processes and problems.

SOC 102 Social Problems **3 Cr., 3 Lec.**
Prerequisite: Sociology 101 or consent of instructor. A study of the background, emergence and scope of current group relationships in our society, emphasizing topics as they apply to the total community environment.

SOC 103 Sex Roles in American Society **3 Cr., 3 Lec.**
A study of the physiological, psychological and sociological aspects of human sexuality. The student may register for either Sociology 103 or Psychology 103, but may receive credit for only one of the two.

SOC 203 Marriage and Family **3 Cr., 3 Lec.**
Prerequisite: Sociology 101 recommended. An analysis of courtship patterns, marriage and family forms, relationships and functions and sociocultural differences in family behavior.

SOC 204 American Minorities **3 Cr., 3 Lec.**
Prerequisite: Sociology 101 and/or six hours of U.S. History recommended. The principal minority groups in American society; their sociological significance and historic contributions. An emphasis will be placed on problems of intergroup relations, social movements and related social changes occurring on the contemporary American scene. The student may register for either History 204 or Sociology 204, but may receive credit for ony one of the two.

SOC 205 Introduction to Social Research **3 Cr., 3 Lec.**
Prerequisites: Sociology 101, Developmental Math 091, or Equivalent. Principles and procedures in social research: sources of data and techniques of collection and analysis, including statistical description. Commonly required of sociology and nursing majors. Useful to students of all behavioral sciences.

SOC 207 Social Psychology **3 Cr., 3 Lec.**
Prerequisites: Psychology 105 and/or Sociology 101. Same as Psychology 207. The student may elect the subject area heading appropriate to his major. The student may register for either Psychology 207 or Sociology 207 but may receive credit in only one of the two.

SOC 231 Urban Social Probems **3 Cr., 3 Lec.**
The sociology of social institutions; urbanization as a process; theories of formation; and the impact of urbanization on the individual.

Solar Energy Technology

ST 101 Energy Science I **4 Cr., 3 Lec., 3 Lab.**
Topics covered in this course include general energy definitions, principles of temperature, heat, and thermodynamics, and the characteristics in measurement of solar radiation. Laboratory fee required.

ST 102 Introduction to Solar Energy **2 Cr., 2 Lec.**
Topics include a general history of solar energy, and overview of collector types, converting solar radiation to thermal energy, the effects of different types of energy efficient construction, traditional and non-traditional solar applications, and a general solar vocabulary.

ST 103 Materials and Handling **2 Cr., 1 Lec., 2 Lab.**
This course will deal with the properties and handling of materials which are utilized in construction of a solar system. It will include the basics of plumbing, sheet metal, carpentry, roofing, glazing, concrete pouring, soldering, welding, and other related techniques. Compatibility of different construction materials will be explored and problems encountered in utilizing materials will be discussed. Laboratory fee required.

ST 104 Energy Science II **4 Cr., 3 Lec., 3 Lab.**
A continuation of Energy Science I. Additional topics include hydrostatics, hydronamics, basic electrical considerations, electromagnetic interactions, lights and optics, and geography. Laboratory fee required.

ST 105 Collectors and Energy Storage **4 Cr., 2 Lec., 4 Lab**
This course includes methods of collecting solar energy for home heating and cooling, detailed study of collector types, hands-on expe-

rience with collector parameters, chemical compatibility of different collector materials and collector fluids, methods of storing solar energy, advantages and disadvantages of physical construction of storage systems, and exotic storage systems for use in electrical generation. Laboratory fee required.

ST 201 Sizing Design and Retrofit **4 Cr., 3 Lec., 3 Lab.**
A solar installation will be examined as a complete system, control systems for heating, cooling, and domestic hot water, integration of solar apparatus with conventional systems, and the sizing of system components to meet a given percentage of heating or cooling load will be studied and calculations made. Laboratory fee required.

ST 202 Operational Diagnosis **3 Cr., 2 Lec., 3 Lab.**
The use of instrumentation and measurements to correctly set up a solar system will be explored. Common problems likely to be encountered in a malfunctioning solar system will be examined and symptom of these problems will be explained. Intentionally introduced defects and problems in the solar system will be identified, tracked down, and repaired. Laboratory fee required.

ST 203 Economics, Codes, Legalities, Consumerism **2 Cr., 2 Lec.**
The economics of solar energy systems will be explored particularly as they are affected by governmental action. Methods of calculating economic costs and benefits will be studied as they relate to both active and passive solar systems. Solar system financing, customer relations, guarantees, and consumer protection will be examined This course will be open-ended since legislative action which affects solar economics is constantly changing.

ST 204 Technical Survey of Energy Sources **3 Cr., 3 Lec.**
Course materials include the supply capabilities of traditional energy resources and the capabilities of future energy resources, energy conservation and environmental problems, and solar energy in the future mix of energy resources.

ST 210 Applications and Future Technology **3 Cr., 2 Lec., 3 Lab.**
This course will cover the application of solar technology for uses other than home heating and cooling. This course will be open-ended and materials will be added as new technologies develop, come into use, or are discarded. Laboratory fee required.

ST 803 (See Cooperative Work Experience) **3 Cr.**

ST 813 (See Cooperative Work Experience) **3 Cr.**

Spanish

SPA 101 Beginning Spanish **4 Cr., 3 Lec., 2 Lab.**
Essentials of grammar, easy idiomatic prose, stress on pronunciation, comprehension and oral expression. Laboratory fee required.

SPA 102 Beginning Spanish **4 Cr., 3 Lec, 2 Lab.**
Prerequisite: Spanish 101 or equivalent. Continuation of Spanish 101 with emphasis on idiomatic language and complicated syntax. Laboratory fee required.

SPA 201 Intermediate Spanish **3 Cr, 3 Lec.**
Prerequisite: Spanish 102 or equivalent or consent of the instructor. Reading, composition, grammar review and intense oral practice.

SPA 202 Intermediate Spanish **3 Cr., 3 Lec.**
Prerequisite: Spanish 201 or equivalent. Continuation of Spanish 201 with reading selections drawn more directly from contemporary literary sources. Composition.

SPA 203 Introduction to Spanish Literature **3 Cr., 3 Lec.**
Prerequisite: Spanish 202 or equivalent or consent of the instructor. Readings in Spanish literature, history, culture, art and civilization.

SPA 204 Introduction to Spanish Literature **3 Cr., 3 Lec.**
Prerequisite: Spanish 202 or equivalent or consent of the instructor. Readings in Spanish literature, history, culture, art, and civilization.

Speech

SPE 100 Speech Laboratory **1 Cr., 3 Lab.**
A laboratory course for the preparation of speeches, reading of dialogue from literature and debate propositions which will be presented throughout the community. May be repeated for one additional hour of credit each semester.

SPE 105 Fundamentals of Public Speaking **3 Cr., 3 Lec.**
An introductory course in public speaking. Principles of reasoning. Emphasis upon the delivery of carefully prepared speeches. Special attention to audience analysis, collection of materials and outlining.

SPE 109 Fundamentals of Public Speaking **3 Cr., 3 Lec.**
A study of the mechanics of speech applied to the improvement of the individual's voice and pronunciation.

SPE 110 Reader's Theatre Workshop **1 Cr., 2 Lab.**
A laboratory course for the preparation and presentation of scripts, readings, and book reviews, collecting and arranging all types of literature for group interpretation and performance. May be repeated once for credit.

SPE 201 Forensic Workshop **1 Cr., 2 Lab.**
A laboratory course for the preparation of speeches, readings, and debate propositions which will be presented in competition and before select audiences. May be repeated for one additional unit of credit.

SPE 205 Discussion and Debate **3 Cr., 3 Lec.**
A study of theories and application of techniques of public discussion and argumentation. Special emphasis on development of ability to evaluate, analyze and think logically through application to current problems.

SPE 206 Oral Interpretation **3 Cr., 3 Lec.**
A study of fundamental techniques of analyzing various types of literature and practice in preparing and presenting selections orally. Emphasis on individual improvement.

SPE 207 Advanced Oral Interpretation **3 Cr., 3 Lec.**
Prerequisites: Speech 105 and 206. Application of basic principles of interpretation to longer selections of literature; more detailed analysis and arranging of poetry and prose for various types of multiple reading situations including choral speaking and reader's theatre. Investigation of all types of literature which are suited to group interpretation work.

Theatre

THE 100 Rehearsal and Performance **1 Cr., 4 Lab.**
Prerequisite: acceptance as a member of the cast or crew of a major production. Participation in the class includes the rehearsal and performance of the current theatrical presentation of the division. May be repeated for credit. Credit limited to one hour per semester.

THE 101 Introduction to the Theatre **3 Cr., 3 Lec.**
A general survey designed to acquaint the student with the various aspects of theatre, plays and playwrights, directing and acting, theatres, artists and technicians.

THE 102 Contemporary Theatre **3 Cr., 3 Lec.**
A study of the modern theatre and cinema as art forms, with attention to the historical background and traditions of each. Emphasis is

placed on a better understanding of the social, cultural and aesthetic significance of these media in today's life. Includes the reading of a number of modern plays and the viewing of specially selected films.

THE 103 Stagecraft 1 **3 Cr., 2 Lec., 3 Lab.**
A study of the technical aspects of play production including set design and construction, stage lighting, make-up, costuming and related areas.

THE 104 Stagecraft II **3 Cr., 2 Lec., 3 Lab.**
Prerequisite: Theatre 103 or consent of instructor. A continuation of Theatre 103 with emphasis on individual projects in set and lighting design and construction, including further exploration of the technical aspects of play production.

THE 105 Make-up for the Stage **3 Cr., 3 Lec.**
Theory and practice of the craft of make-up. Laboratory fee required.

THE 106 Acting I **3 Cr., 2 Lec., 3 Lab.**
Individual and group activity with theory and exercises in body control, voice, pantomine, interpretation, characterization and stage movement. Analysis and study of specific roles for stage presentation.

THE 107 Acting II **3 Cr., 2 Lec., 3 Lab.**
Prerequisite: Theatre 106 or consent of instructor. Continuation of Theatre 106 with emphasis on problems of complex characterization, ensemble acting, stylized acting and acting in period plays.

THE 108 Movement for the Stage **3 Cr., 2 Lec., 3 Lab.**
A study of movement as both a pure form as well as its relation and integration with the theatre arts. The course will include movement as a technique to control balance, rhythm, strength, and flexibility. Movement will be explored as it is used in all the theatrical forms and in development of characterization. May be repeated for credit.

THE 109 Voice and Articulation **3 Cr., 3 Lec.**
Same as Speech 109. The student may not receive credit for both Theatre 109 and Speech 109.

THE 110 History of Theatre I **3 Cr., 3 Lec.**
Survey of theatre from its beginning through the sixteenth century. Study of the theatre in each period as a part of the total culture of the period.

THE 111 History of Theatre II **3 Cr., 3 Lec.**
Development of the theatre from the seventeenth century through the twentieth century.

THE 112 Beginning Dance Technique in Theatre **3 Cr., 2 Lec., 3 Lab.**
Course designed to promote body balance, improve manipulation of trunk and limbs, and facilitate the rhythmic flow of physical energy. Exploration of basic movements of the dance with emphasis on swing movements, circular motion, fall and recovery, contraction and release, and contrast of literal and abstract movements.

THE 113 Intermediate Dance **3 Cr., 2 Lec., 3 Lab.**
Prerequisite: Theatre 112 or permission of instructor. A general survey to acquaint the student with the various aspects of dance and its role in total theatre, including the evolution of dance styles. Exploration of jazz style emphasizing flow of movement, body placement, dynamic intensity, level, focus, and direction.

THE 205 Scene Study I **3 Cr., 2 Lec., 3 Lab.**
Prerequisites: Theatre 106, 107. Continuation of Acting II with emphasis on developing dramatic action through detailed study of the playscript. Students will deal with the stylistic problems presented by the staging of period plays and the development of realism. Conference and scheduled rehearsals in preparation for scene work.

THE 208 Introduction to Technical Drawing **3 Cr., 2 Lec., 3 Lab.**
Basic techniques of drafting dealing with isometrics, orthographic projections and other standard procedures. The emphasis is placed on theatrical drafting including ground plans, vertical sections, construction elevations and spider perspective.

THE 209 Lighting Design **3 Cr., 2 Lec., 3 Lab.**
Prerequisites: Theatre 103 and 104. A study of design and techniques of lighting in the theatre. Practical experience in departmental productions required for one semester.

THE 235 Costume History **3 Cr., 3 Lec.**
A study of fashion costume, people and social customs throughout history. This includes the Egyptian, Greek, Roman, Gothic and Elizabethan periods through the 1890's and into modern styles.

Typing

Typing

(See Business 172, 174, 273)

Word Processing

Word Processing

(See Business 165 and 265)

Work Experience

Work Experience

(See Cooperative Work Experience)

TECHNICAL OCCUPATIONAL PROGRAMS

Career Programs offered in the Dallas County Community College District

North Lake College

Accounting Associate
Accounting Technician
Aviation
  Ground School (Private/Commercial/Instrument)
Air Conditioning & Refrigeration
  Commercial Refrigeration & Air Conditioning
  Residential Air Conditioning
Banking & Finance
  Banking Option
  Credit and Financial Management Option
  Savings and Loan Option
Building Trades
  Carpentry
    Commercial
      Residential
  Electricity
Diesel Mechanics
Distribution Technology
Mid-Management
  Small Business Management
Office Occupations
  General Office Careers
  Secretarial Careers
  Legal Secretary
Optical Technology
Pilot Ground School
Real Estate
Solar Energy Technology

Brookhaven

Accounting Associate
Accounting Technician
Auto Body Repair & Painting
Automotive Machinist
Automotive Mechanics
Automotive Parts Counter Assistant
Automotive Parts Sales & Service
Child Development Adm. Assistant
Child Development Assistant
Child Development Associate
Mid-Management
Retail Distribution & Marketing
  Commercial Design & Advertising
  Fashion Merchandising
  Retail Management
Secretarial Careers

Cedar Valley

Accounting Associate
Accounting Technician
Air Conditioning & Refrigeration
  Commercial
  Residential
Animal Medical Technology
Automotive Apprenticeship
Automotive Technology
Commercial Music
  Arranger/Composer/Copyist
  Music Retailing
  Performing Musician
Major Appliance Repair
Mid-Management
  Small Business Management
Motorcycle Mechanics
Office Careers
  General Office Occupations
  Legal Secretary
  Secretarial Careers
Outboard Marine Engine Mechanics
Retail Distribution & Mktg. Tech.
  Commercial Design & Advertising
  Fashion Merchandising
  Retail Management
Small Engine Mechanics

Eastfield

Accounting Assistant
Accounting Associate
Air Conditioning & Refrig. Tech.
Auto Body
Automotive Apprenticeship

Automotive Technology
Child Development Assistant
Child Development Associate
Digital Electronics
Drafting & Design Technology
Graphic Arts
Graphic Communications
Mid-Management
  Small Business Management
Office Careers
  Administrative Secretary
  General Secretary
  Office Skills & Systems
  Professional Secretary
Social Work Associate
Training Paraprofessionals for the Deaf
Transportation Technology
Welding Technology

El Centro

Accounting Associate
Accounting Technician
Apparel Design
Architecture Technology
Banking & Finance
  Banking Option
  Credit and Financial Mgmt.
  Savings and Loan Option
Data Processing
  Data Processing Operator
  Data Processing Programmer
  Information Systems
  Key Entry/Data Control
  Small Computer Systems
    Information Specialist
Drafting & Design Technology
Educational Paraprofessional
Fire Protection Technology
Food Service
  Dietetic Assistant
  Dietetic Technician
  Food Service Operations
  School Food Service
Hotel/Motel Operations
Interior Design
Legal Assistant
Medical
  Associate Degree Nursing
  Dental Assistant Technology
  Long Term Health Care
  Medical Assistant Technology
  Medical Lab Technician
  Medical Transcriptionist
  Radiologic Technology
  Respiratory Therapy Assistant
  Respiratory Therapy Technology
  Surgical Technology
  Vocational Nursing
Mid-Management
  Small Business Management
Office Careers
  General Office Occupations
  General Secretary
  Professional Secretary
Pattern Design
Police Science

Mountain View

Accounting Associate
Accounting Technician
Aviation Maintenance Technology
  Airframe
  Powerplant
Aviation Technology
  Air Cargo Transport
  Aircraft Dispatcher
  Airline Marketing
  Career Pilot
  Fixed Base Oprs/Airport Mgmt.
Avionics Technology
Drafting & Design Technology
Educational Paraprofessional
Electronics Technology
Horology
Machine Shop
Mid-Management
  Small Business Management
Office Careers
  General Office Occupations
  General Secretary
  Office Skills & Systems
  Professional Secretary
Welding Technology

Richland

Accounting Associate
Accounting Technician
Banking & Finance
  Banking Option
  Credit and Financial Mgmt.
  Savings & Loan Option
Construction Mgmt. & Technology
Educational Paraprofessional
Engineering Technology
  Electric Power
  Electro-Mechanical
  Fluid Power
  Quality Control
Human Services Associate
Mental Health Assistant
Social Worker Assistant
Mid-Management
  Small Business Management
Office Careers
  Administrative Secretary
  Educational Secretary
  General Office Occupations
  General Secretary
  Office Skills & Systems
  Professional Secretary
Ornamental Horticulture Technology
  Florist
  Greenhouse Florist
  Landscape Gardener
  Landscape Nursery
Real Estate

Technical-Occupational Programs Offered by Tarrant County Junior Colleges Available to Dallas County Residents

Dallas County residents may enroll in the programs listed below at the appropriate Tarrant County Junior College at the Tarrant County resident's tuition rate. This reciprocal arrangement does not apply to programs of instruction which are filled to capacity with Tarrant County students.

Northeast Campus Courses
- Civil Technology
- Dental Hygiene
- Emergency Medical Technician
- Fahsion Merchandising
- Food Marketing
- Labor Studies
- Media Technology
- Physical Therapy Assistant

Northwest Campus Courses
- Agribusiness
- Postal Service Administration

South Campus Courses
- Industrial Supervision
- Mechanical Technology

CAREER PROGRAMS

Accounting

Accounting Careers is designed to provide the student with a working knowledge of bookkeeping procedures currently in use in business; to introduce accounting principles supporting bookkeeping procedures; and to give you practical bookkeeping experience by the use of problem solving.

CERTIFICATE PROGRAM — ACCOUNTING TECHNICIAN

Courses required for a Certificate of Completion are listed below. The courses may be taken in any order provided that prerequisites have been met. Students should check the course descriptions in the catalog to determine which courses have prerequisites.

Fall Semester I	**Lec Hrs**	**Lab Hrs**	**Cr Hrs**
BUS 105 Introduction to Business	3	0	3
BUS 131 Bookkeeping I*	3	0	3
BUS 160 Office Machines	3	0	3
COM 131 Applied Composition and Speech	3	0	3
MTH 130 Business Mathematics	3	0	3
			15
Spring Semester I			
BUS 132 Bookkeeping II*	3	0	3
BUS 172 Beginning Typing	2	3	3
or BUS 174 Intermediate Typing	(1)	(2)	(2)
CS 175 Introduction to Computer Science	3	0	3
COM 132 Applied Composition and Speech	3	0	3
Elective*			3
			14/15

***Recommended Electives:**
PSY 131 Human Relations
BUS 231 Business Correspondence
BUS 162 Secretarial Training
BUS 234 Business Law

**BUS 201 — Principles of Accounting I may be substituted for BUS 131 and BUS 132.*

ASSOCIATE DEGREE PROGRAM

This program is designed to prepare the student for a career as a junior accountant in business, industry, and government. Emphasis will be placed on internal accounting procedures and generally accepted accounting principles as they relate to external reporting with selected electives in cost accounting and tax accounting.

Courses required for an Associate in Applied Arts and Sciences Degree are listed below. The courses may be taken in any order provided that prerequisites have been met. Students should check the course descriptions in the catalog to determine which courses have prerequisites.

Accounting Associate Degree Plan

Fall Semester I	Lec Hrs	Lab Hrs	Cr Hrs
*BUS 201 Principles of Accounting I	3	0	3
BUS 105 Introduction to Business	3	0	3
BUS 160 Office Machines	3	0	3
COM 131 Applied Composition and Speech or ENG 101 Composition and Expository Reading	3	0	3
MTH 130 Business Mathematics or MTH 111 Mathematics for Business and Economics	3	0	3
			15

*BUS 131, Bookkeeping I, and BUS 132, Bookkeeping II, may be substituted for BUS 201

Spring Semester I			
BUS 202 Principles of Accounting II	3	0	3
BUS 136 Principles of Management	3	0	3
CS 175 Introduction to Computer Sciences	3	0	3
COM 132 Applied Composition and Speech or ENG 102 Composition and Literature	3	0	3
BUS 172 Beginning Typing or BUS 174 Intermediate Typing	2 (1)	3 (2)	3 (2)
			14/15

Fall Semester II			
BUS 203 Intermediate Accounting	3	0	3
BUS 238 Cost Accounting or BUS 239 Income Tax Accounting	3	0	3
GVT 201 American Government	3	0	3
ECO 201 Principles of Economics	3	0	3
BUS 803 or BUS 804 Work Experience or Elective*	3-4		3-4
			15/16

Spring Semester II			
BUS 204 Managerial Accounting	3	0	3
BUS 234 Business Law	3	0	3
BUS 231 Business Correspondence	3	0	3
ECO 202 Principles of Economics	3	0	3
BUS 237 Organizational Behavior	3	0	3
BUS 813 or BUS 814 Work Experience or Elective*	3-4		3-4
			18/19

***Recommended Electives**

BUS 143 Personal Finance
BUS 205 Business Finance
BUS 206 Principles of Marketing
BUS 238 Cost Accounting
BUS 239 Income Tax Accounting
PSY 105 Introduction to Psychology
PSY 131 Human Relations

Air Conditioning and Refrigeration

This program is designed to prepare the student for entry level employment in the Air Conditioning and Refrigeration industry. Two options are available in this program: Residential Air Conditioning and Commercial Refrigeration and Air conditioning. Commercial Refrigeration and Air Conditioning courses are scheduled to be available in 1981. The student will develop the skills and knowledge necessary to install, repair and maintain equipment related to these options.

Some air conditioning courses are completely individualized. This allows the students to progress at their own pace in order to fully comprehend theory and develop the necessary skills. Individualized, self-paced instruction also allows the students to take a portion of a course (module) without taking the complete course, if some specific knowledge or skill is desired.

Students may elect to receive a certificate or may apply the certificate courses required in this program toward an Associate in Applied Arts and Sciences Degree.

CERTIFICATE PROGRAM

A Certificate of Completion may be obtained in one or both of the options in the Air Conditioning Program. In order to qualify for a certificate, the student must successfully complete the courses listed for the specific option. The courses may be taken in any order desired after consultation with the instructor.

CERTIFICATE OPTION — RESIDENTIAL AIR CONDITIONING

The student will develop skills in diagnosing, checking, servicing, installing and repairing both electrical and mechanical components or residential cooling and heating systems; the student will also make load calculations, select equipment and design residential air distribution systems.

	Contact Hours	Credit Hours
Fall Semester I		
AC 150 Basic Principles of Electricity	90	3
AC 160 Basic Principles of Refrigeration	90	3
MTH 195 Technical Mathematics	48	3
PHY 131 Applied Physics	96	4
	324	13
Spring Semester I		
AC 155 Advanced Electrical Circuits	90	3
AC 165 Vapor Compression Systems	90	3
AC 170 Pipefitting Procedures	90	3
AC 175 Residential Load Calculations	90	3
	360	12
Fall Semester II		
AC 180 Residential Cooling Systems	90	3
AC 185 Residential Heating Systems	90	3
AC 240 Air Distribution Systems	90	3
AC 245 Residential Systems Service	90	3
ACR 703 Cooperative Work Experience	256	3
OR		
ACR 704 Cooperative Work Experience	336	4
OR		
*Elective	48	3-4
	408-696	15-16
Minimum hours for Certificate	1300	40

COMMERCIAL REFRIGERATION AND INDUSTRIAL AIR CONDITIONING — CERTIFICATE PROGRAM

The student will develop skills in diagnosing, servicing, checking, installing and repairing both electrical and mechanical components of Commercial Refrigeration and Industrial Air Conditioning Systems.

	Contact Hours	Credit Hours
Fall Semester I		
AC 150 Basic Principles of Electricity	90	3
AC 160 Basic Principles of Refrigeration	90	3
MTH 195 Technical Mathematics	48	3
PHY 131 Applied Physics	96	4
	324	13
Spring Semester I		
AC 155 Advanced Electrical Circuits	90	3
AC 165 Vapor Compression Systems	90	3
AC 170 Pipefitting Procedures	90	3
AC 190 Commercial Refrigeration Systems	90	3
AC 195 Commercial Refrigeration Systems Service	90	3
	450	15
Fall Semester II		
AC 260 Special Commercial Refrigeration Applications	90	3
AC 270 Industrial Air-Conditioning Systems	90	3
AC 275 Industrial Air-Conditioning Systems Service	90	3
AC 280 Hydronic Systems	90	3
AC 703 Cooperative Work Experience	256	3
OR		
AC 704 Cooperative Work Experience	336	4
OR		
*Elective	48	3
	408-696	15-16
Minimum hours for Certificate	1030	43

ASSOCIATE DEGREE PROGRAM

Students wishing to earn an Associate in Applied Arts and Sciences Degree with a major in Residential Air Conditioning or Commercial Refrigeration and Air Conditioning must complete all of the courses for the certificate program for that specific option in addition to the courses listed as follows:

ASSOCIATE DEGREE PROGRAM — RESIDENTIAL AIR-CONDITIONING

Fall Semester I	**Contact Hours**	**Credit Hours**
AC 150 Basic Principles of Electricity	90	3
AC 160 Basic Principles of Refrigeration	90	3
MTH 195 Technical Mathematics	48	3
PHY 131 Applied Physics	96	4
	324	13
Spring Semester I		
AC 155 Advanced Electrical Circuits	90	3
AC 165 Vapor Compression Systems	90	3
AC 170 Pipefitting Procedures	90	3
AC 175 Residential Load Calculations	90	3
SS 131 American Civilization	48	3
	408	15
Fall Semester II		
AC 180 Residential Cooling Systems	90	3
AC 185 Residential Heating Systems	90	3
AC 240 Air Distribution Systems — Residential	90	3
BPR 177 Blueprint Reading	64	2
COM 131 Applied Communications & Speech	48	3
MAR 235 Professional Service Skills *OR* PSY 131 Human Relations	48	3
	430	17
Spring Semester II		
AC 245 Residential Systems Service	48	3
AC 250 Air-Conditioning Equipment Selection	90	3
AC 255 Air Distribution Systems Design	90	3
AC 703 Cooperative Work Experience *OR* AC 704 Cooperative Work Experience	256 336	3 4
*Elective	48	3-4
	532-612	15-17
Minimum Hours Required for Associate Degree:		60-62

***Electives**

Three hours of electives are required for the Residential AC Certificate, Residential AC Associate Degree and the Commercial Refrigeration and Industrial AC Certificate. Following is a list of recommended electives:

	Contact Hours	*Credit Hours*
AC 270 Industrial Air-Conditioning Systems	90	3
ACR 803 Cooperative Work Experience	256	3
ACR 804 Cooperative Work Experience	336	4

BUS 105 Introduction to Business	48	3
BUS 131 Bookkeeping	48	3
BUS 136 Principles of Management	48	3
COM 132 Applied Communications & Speech	48	3
*MAR 235 Professional Service Skills	48	3
*PSY 131 Human Relations	48	3

*MAR 235 or PSY 131 required in the Associate Degree Program

ASSOCIATE DEGREE PROGRAM — COMMERCIAL REFRIGERATION AND INDUSTRIAL AIR CONDITIONING

Fall Semester I	**Contact Hours**	**Credit Hours**
AC 150 Basic Principles of Electricity	90	3
AC 160 Basic Principles of Refrigeration	90	3
MTH 195 Technical Mathematics	48	3
PHY 131 Applied Physics	96	4
BPR 177 Blueprint Reading	64	2
	388	15
Spring Semester I		
AC 155 Advanced Electrical Circuits	90	3
AC 165 Vapor Compression Systems	90	3
AC 170 Pipefitting Procedures	90	3
AC 190 Commercial Refrigeration Systems	90	3
SS 131 American Civilization	48	3
	408	15
Fall Semester II		
AC 195 Commercial Refrigeration Systems Service	90	3
AC 260 Special Commercial Refrigeration Applications	90	3
AC 265 Advanced Commercial Refrigeration Systems	90	3
AC 270 Industrial Air-Conditioning Systems	90	3
COM 131 Applied Communications & Speech	48	3
	408	15
Spring Semester II		
AC 275 Industrial Air-Conditioning Systems Service	90	3
AC 280 Hydronic Systems	90	3
AC 285 Advanced Industrial Air-Conditioning Systems	90	3
AC 290 Industrial Air-Conditioning Control Systems	90	3
AC 703 Cooperative Work Experience	256	3
or		
AC 704 Cooperative Work Experience	336	4
MAR 235 Professional Service Skills		
or		
PSY 131 Human Relations	48	3
	664-744	18-19
Minimum Hours Required for the Associate Degree:	1868	63

Banking and Finance

The Banking and Finance program is designed to prepare students for entry or advancement into the field of financial institutions. The curriculum offers three specialized options including: Banking, Savings and Loan and Credit Management.

Successful completion of this program leads to the Associate in Applied Arts and Sciences Degree.

ASSOCIATE DEGREE PROGRAM — BANKING OPTION

Fall Semester I	**Lec Hrs**	**Lab Hrs**	**Cr Hrs**
BF 103 Introduction to Banking[1]	3	0	3
BUS 136 Principles of Management	3	0	3
COM 131 Applied Composition and Speech	3	0	3
ECO 201 Principles of Economics I	3	0	3
Elective (Select from general electives)*	3	0	3
	15	0	15
Spring Semester I			
BF 104 Money and Banking[1]	3	0	3
BF 105 Comparative Financial Institutions	3	0	3
BUS 201 Principles of Accounting I	3	0	3
ECO 202 Principles of Economics II	3	0	3
GVT 201 American Government	3	0	3
Elective (Select from general electives)*	3	0	3
	18	0	18
Fall Semester II			
BUS 237 Organizational Behavior	3	0	3
CS 175 Introduction to Computer Science	3	0	3
Elective (Select from Banking Functions electives)**	9	0	9
BUS 202 Principles of Accounting II	3	0	3
	18	0	18
Spring Semester II			
BF 204 Federal Regulations of Banking[1] or BF 205 Analyzing Financial Statements[1] or BF 206 Negotiable Instruments and the Payments Mechanism[1]	3	0	3
BF 203 Public Relations & Marketing of Financial Services	3	0	3
BUS 231 Business Correspondence	3	0	3
Elective (Select from general electives)*	3	0	3
Elective (Select from Banking Functions electives)**	3	0	3
	15	0	15

Banking Functions Electives[1]**	**Lec Hrs**	**Lab Hrs**	**Cr Hrs**
BF 110 The Federal Reserve System	*3*	*0*	*3*
BF 111 Trust Functions and Services	*3*	*0*	*3*
BF 112 Installment Credit	*3*	*0*	*3*
BF 113 Credit Card Banking	*3*	*0*	*3*
BF 114 Teller Training[2]	*2*	*1*	*3*
BF 115 Credit and Collection Principles	*3*	*1*	*3*

BF 116 Construction Lending	1	0	1
BF 117 Letters of Credit	2	0	2
BF 118 Installment Loan Interviews	1	0	1
BF 119 New Accounts	1	0	1
BF 120 Selling Bank Services	1	0	1
BF 121 Loss Prevention	1	0	1
BF 122 Safe Deposit	1	0	1
BF 123 Loan and Discount	1	0	1
BF 124 Stocks and Bonds	1	0	1
RE 131 Real Estate Finance	3	0	3
General Electives*			
BUS 209 Principles of Insurance	3	0	3
BUS 105 Introduction to Business	3	0	3
MTH 130 Business Math	3	0	3
BUS 143 Personal Finance	3	0	3
BUS 159 Beginning Shorthand	3	2	4
BUS 160 Office Machines	3	0	3
BUS 162 Office Procedures	3	0	3
BUS 166 Intermediate Shorthand	3	2	4
BUS 172 Beginning Typing	2	3	3
BUS 174 Intermediate Typing	1	2	2
BUS 234 Business Law	3	0	3
BF 713, 803, 813 Cooperative Work Experience[2]	0	15	3

[1]Course may be offered through American Institute of Banking (AIB)
[2]Enrollment only with consent of instructor.
[3]Students may substitute *Principles of Bank Operations* (taken through the American Institute of Banking)

ASSOCIATE DEGREE PROGRAM — CREDIT AND FINANCIAL MANAGEMENT OPTION

Fall Semester I	**All Lecture Hours**
BF 101 Credit Management	3
COM 131 Applied Composition and Speech	3
BUS 136 Principles of Management	3
ECO 201 Principles of Economics I	3
Elective*	3
	15
Spring Semester I	
BF 115 Credit and Collection Principles	3
BUS 234 Business Law	3
ECO 202 Principles of Economics II	3
CS 175 Introduction to Computer Science	3
BF 105 Comparative Financial Institutions	3
	15
Fall Semester II	
BF 201 Advanced Credit Analysis	3
BUS 237 Organizational Behavior	3
BUS 201 Principles of Accounting I	3
GVT 201 American Government	3
Elective*	3
	15

Spring Semester II

BF 202 Credit Law	3
BF 203 Public Relations and Marketing of Financial Services	3
BUS 231 Business Correspondence	3
BUS 202 Principles of Accounting II	3
Elective*	3
	15

Electives (9 credits required for Associate Degree)

	Lec Hrs	Lab Hrs	Cr Hrs
*BF 205 Analyzing Financial Statements**	*3*	*0*	*3*
*BF 104 Money and Banking**	*3*	*0*	*3*
*BUS 209 Principles of Insurance**	*3*	*0*	*3*
MTH 130 Business Math	*3*	*0*	*3*
*BUS 143 Personal Finance**	*3*	*0*	*3*
BUS 159 Beginning Shorthand	*3*	*2*	*4*
BUS 160 Office Machines	*3*	*0*	*3*
BUS 162 Office Procedures	*3*	*0*	*3*
BUS 166 Intermediate Shorthand	*3*	*2*	*4*
BUS 172 Beginning Typing	*2*	*3*	*3*
BUS 174 Intermediate Typing	*1*	*2*	*2*
*BUS 238 Cost Accounting**	*3*	*0*	*3*
*BF 713, 803, 813 Cooperative Work Experience***	*0*	*15*	*3*

**To qualify as a candidate for National Institute of Credit Fellow Award, students must complete required courses indicated in the 4 semesters plus one course from the Elective component of the curriculum designated by *.*

***Enrollment only with consent of instructor.*

ASSOCIATE DEGREE PROGRAM — SAVINGS AND LOAN OPTION

Fall Semester I	Lec Hrs	Lab Hrs	Cr Hrs
BF 106 Introduction to the Savings Association Business	2	0	2
BUS 171 Introduction to Supervision	3	0	3
COM 131 Applied Composition & Speech	3	0	3
CS 175 Introduction to Computer Science	3	0	3
Elective*	3	0	3
			14
Spring Semester I			
BF 107 Savings Association Operations	2	0	2
BUS 136 Principles of Management	3	0	3
ECO 201 Principles of Economics	3	0	3
BUS 231 Business Correspondence	3	0	3
BF 105 Comparative Financial Institutions	3	0	3
Elective*	3	0	3
			17
Fall Semester II			
BF 207 Savings Account Administration	2	0	2
BUS 201 Principles of Accounting	3	0	3
ECO 202 Principles of Economics II	3	0	3
BUS 237 Organizational Behavior	3	0	3
Elective*	3	0	3
			14

Spring Semester II

BUS 202 Principles of Accounting II	3	0	3
BF 203 Public Relations & Marketing of Financial Services	3	0	3
GVT 201 American Government	3	0	3
RE 130 Real Estate Practices & Principles	3	0	3
Elective*	3	0	3
			15

***Recommended Electives**	**Lec Hrs**	**Lab Hrs**	**Cr Hrs**
BF 125 Saving Association Lending	3	0	3
BF 205 Analyzing Financial Statements	3	0	3
BF 115 Credit and Collection Principles	3	0	3
*BF 114 Teller Training***	2	1	3
BUS 209 Principles of Insurance	3	0	3
BUS 143 Personal Finance	3	0	3
BUS 162 Office Procedures	3	0	3
BUS 234 Business Law	3	0	3
MTH 130 Business Math	3	0	3
RE 131 Real Estate Finance	3	0	3
RE 135 Real Estate Appraisal	3	0	3
*BF 713, 803, 813 Cooperative Work Experience***	0	15	3

*12 Credit Hours Required for Associate Degree and to qualify for IFE Degree of Distinction.

**Enrollment only with the consent of instructor.

Building Trades Residential and Commercial Carpentry

This program is designed to prepare the student for entry level employment as a carpenter in the Building Construction field. Specific training is provided in the use and care of hand tools and power equipment, scheduling, layout and construction of residential and light commercial type buildings, cabinet making, blueprint reading and cost estimating. Two options are available in this program: Residential Carpentry and Commercial Carpentry.

Some Carpentry courses are individualized. This allows the students to progress at their own pace in order to fully comprehend theory and develop the necessary skills. The individualized self-paced instruction also allows the student to take a course (module) without taking the complete course. Credit for prior training or experience may be granted.

Students may elect to receive a certificate or may apply the certificate courses required in this program toward an Associate in Applied Arts and Sciences Degree.

CERTIFICATE PROGRAM

A Certificate of Completion may be obtained in one or both of the options in Carpentry. In order to qualify for a certificate, the student must successfully complete the following courses. Courses may be taken in any order after consultation with the instructor.

CERTIFICATE OPTION — RESIDENTIAL CARPENTRY

The residential carpentry option is designed to prepare the student for entry level employment as a carpenter in all phases of residential construction.

Fall Semester I	**Contact Hours**	**Credit Hours**
CAR 101 Woodworking/Tools/Materials	90	3
CAR 102 Site Prep/Foundation Forming	90	3
BPR 177 Blueprint Reading	60	2
MTH 195 Technical Mathematics	48	3
CAR 103 Construction Safety	30	1
	318	12
Spring Semester I		
CAR 104 Residential Framing	90	3
CAR 105 Roof Framing I	90	3
CAR 106 Exterior Finish	90	3
CAR 107 Cost Estimating	48	3
	318	12
Fall Semester II		
CAR 205 Roof Framing II	90	3
CAR 208 Interior Finish I	90	3
CAR 201 Cabinet Building I	90	3
	270	9
Spring Semester II		
CAR 203 Stair Building	90	3
CAR 202 Cabinet Building II	90	3
CAR 703 Work Experience	256	3
OR	or	or
CAR 704 Work Experience	336	4
	436-516	9-10
Minimum Hours Required for Carpentry Certificate Program	1342	42

CERTIFICATE PROGRAM — COMMERCIAL CARPENTRY

The commercial carpentry option is designed to prepare the student for entry level employment as a carpenter in the construction industry related to light commercial buildings.

	Contact Hours	Credit Hours
Fall Semester I		
CAR 101 Woodworking/Tools/Materials	90	3
CAR 102 Site Prep/Foundation Forming	90	3
BPR 177 Blueprint Reading	60	2
MTH 195 Technical Mathematics	48	3
CAR 103 Construction Safety	30	1
	318	12
Spring Semester I		
CAR 108 Modern Construction Practices	90	3
CAR 109 Concrete Slabs in Commercial Building	90	3
CAR 208 Interior Finish I	90	3
CAR 107 Cost Estimating	48	3
	318	12
Fall Semester II		
CAR 204 Walls Forms Commercial	90	3
CAR 206 Vertical Piers and Columns	90	3
CAR 209 Interior Finish II — Commercial	90	3
	270	9
Spring Semester II		
CAR 210 Horizontal Beams and Fire Proof Encasement	90	3
CAR 203 Stair Building	90	3
CAR 211 Properties of Concrete	30	1
CAR 703 Work Experience	240	3
Or	or	or
CAR 704 Work Experience	336	4
	450	10
	or 546	or 11
Minimum Required for Commercial Carpentry	1356	43

ASSOCIATE DEGREE PROGRAM

Students wishing to earn an Associate Applied Arts and Sciences Degree with a major in Residential Carpentry or Commercial Carpentry must complete the courses listed following:

ASSOCIATE DEGREE PROGRAM — RESIDENTIAL CARPENTRY*

Fall Semester I	Contact Hours	Credit Hours
CAR 101 Woodworking/Tools/Materials	90	3
CAR 102 Site Prep/Foundation Forming	90	3
BPR 177 Blueprint Reading	60	2
MTH 195 Technical Mathematics	48	3
COM 131 Applied Composition and Speech	48	3
CAR 103 Construction Safety	30	1
	366	15
Spring Semester I		
CAR 104 Residential Framing	90	3
CAR 105 Roof Framing I	90	3
CAR 106 Exterior Finish	90	3
CAR 107 Cost Estimating	48	3
SS 131 American Civilization	48	3
	366	15
Fall Semester II		
CAR 205 Roof Framing II	90	3
CAR 208 Interior Finish I	90	3
CAR 201 Cabinet Building I	90	3
BUS 105 Introduction to Business	48	3
COM 132 Applied Composition and Speech	48	3
	366	15
Spring Semester II		
CAR 203 Stair Building	90	3
CAR 202 Cabinet Building II	90	3
CAR 703 Work Experience	256	3
or	or	or
CAR 704 Work Experience	336	4
PSY 131 Human Relations	48	3
BUS 131 Bookkeeping	48	3
	532	15
	or 612	or 16
Minimum Hours Required for the Residential Carpentry — Associate Degree	1630	60

*Students wishing to earn an Associate in Applied Arts and Sciences Degree with a major in Residential Carpentry or Commercial Carpentry must complete all of the courses for the certificate program for that specific option in addition to the courses listed above.

ASSOCIATE DEGREE PROGRAM — COMMERCIAL CARPENTRY*

Fall Semester I	Contact Hours	Credit Hours
CAR 101 Woodworking/Tools/Materials	90	3
CAR 102 Site Prep/Foundation Forming	90	3
BPR 177 Blueprint Reading	60	2
MTH 195 Technical Mathematics	48	3
COM 131 Applied Composition and Speech	48	3
CAR 103 Construction Safety	30	1
	366	15
Spring Semester I		
CAR 108 Modern Construction Practices	90	3
CAR 109 Concrete Slabs in Commercial Building	90	3
CAR 208 Interior Finish I	90	3
CAR 107 Cost Estimating	48	3
SS 131 American Civilization	48	3
	366	15
Fall Semester II		
CAR 204 Walls Forms Commercial	90	3
CAR 206 Vertical Piers and Columns	90	3
CAR 209 Interior Finish II Commercial	90	3
BUS 105 Introduction to Business	48	3
COM 132 Applied Composition and Speech	48	3
	366	15
Spring Semester II		
CAR 210 Horizontal Beams and Forming	90	3
CAR 203 Stair Building	90	3
CAR 211 Properties of Concrete	30	1
CAR 703 Work Experience	256	3
OR	or	or
CAR 704 Work Experience	336	4
PSY 131 Human Relations	48	3
BUS 131 Bookkeeping	48	3
	562 or 642	16 or 17
Minimum Hours Required for the Associate Degree	1530	61

This program is designed to prepare the student for entry level employment as an electrician in the construction field. Specific training is provided in electrical circuit calculations and measurements, residential and commercial wiring practices, machines and motor controls, blueprint reading, job layout and estimating and the electrical code.

Some Electrical courses are completely individualized. This allows the students to progress at their own pace in order to fully comprehend theory and develop the necessary skills. The individualized self-paced instruction also allows the student to take a portion of a course (module) without taking the complete course. Credit for prior training or experience may be granted.

Students may elect to receive a certificate or may apply the certificate courses required in this program toward an Associate in Applied Arts and Sciences Degree.

CERTIFICATE PROGRAM — ELECTRICAL

Completion of all of the courses listed below qualifies a student for a certificate in Electricity. The courses may be taken in any order after consultation with the instructor.

Fall Semester I	**Contact Hours**	**Credit Hours**
ELE 100 Electrical Orientation	30	1
ELE 101 DC Circuits and Measurements	30	1
ELE 111 Residential Codes	30	1
ELE 112 General Wiring	120	4
ELE 113 Appliance Circuits	90	3
MTH 195 Technical Mathematics	48	3
BPR 177 Blueprint Reading	64	2
	412	15
Spring Semester I		
ELE 114 Low Voltage Circuits	30	1
ELE 121 Commercial Codes	30	1
ELE 122 Commercial Wiring	120	4
ELE 123 Power Circuits	90	3
ELE 202 Basic AC Circuits	60	2
ELE 231 Motor Codes	30	1
ELE 232 DC and Single Phase Machines	30	1
ELE 233 Three-Phase Motors	30	1
	420	14
Fall Semester II		
ELE 241 Control Circuit Diagrams	30	1
ELE 242 Magnetic Starting and Overload Protection	30	1
ELE 243 Jogging, Reversing, and Sequencing	30	1
ELE 244 Solid State Controls	30	1
ELE 203 Three-Phase Circuits	30	1
ELE 251 Transformer Types and Testing	30	1
ELE 252 Distribution Transformers	60	2
ELE 261 Residential Planning	60	2
ELE 262 Commercial Planning	60	2
	360	12
Minimum Hours Required for Certificate:	1192	41

ASSOCIATE DEGREE PROGRAM — ELECTRICAL

Students wishing to earn an Associate in Applied Arts and Sciences Degree with a major in Electricity must complete all of the courses below.

Fall Semester I	Contact Hours	Credit Hours
ELE 100 Electrical Orientation	30	1
ELE 101 DC Circuits and Measurements	30	1
ELE 111 Residential Codes	30	1
ELE 112 General Wiring	120	4
ELE 113 Appliance Circuits	90	3
MTH 195 Technical Mathematics	48	3
BPR 177 Blueprint Reading	64	2
	412	15
Spring Semester I		
ELE 114 Low Voltage Circuits	30	1
ELE 121 Commercial Codes	30	1
ELE 122 Commercial Wiring	120	4
ELE 123 Power Circuits	90	3
COM 131 Applied Composition and Speech	48	3
SS 131 American Civilization	48	3
	366	15
Fall Semester II		
ELE 202 Basic AC Circuits	60	2
ELE 231 Motor Codes	30	1
ELE 232 DC and Single Phase Machines	30	1
ELE 233 Three-Phase Motors	30	1
ELE 241 Control Circuit Diagrams	30	1
ELE 242 Magnetic Starting and Overload Protection	30	1
ELE 243 Jogging, Reversing and Sequencing	30	1
ELE 244 Solid State Controls	30	1
*Electives	96	6
	366	15
Spring Semester II		
ELE 203 Three-Phase Circuits	30	1
ELE 251 Transformer Types and Testing	30	1
ELE 252 Distribution Transformers	60	2
ELE 261 Residential Planning	60	2
ELE 262 Commercial Planning	60	2
*Electives	112	7
	352	15
Minimum Hours Required for the Associate Degree:	1496	60

*Thirteen credit hours of electives are required and shall be selected from the following list of courses.

	Contact Hours	Credit Hours
COM 132 Applied Composition and Speech	48	3
PSY 131 Human Relations	48	3
PHY 131 Applied Physics	96	4
BUS 105 Introduction to Business	48	3
BUS 131 Bookkeeping	48	3
BUS 136 Principles of Management	48	3
BUS 153 Small Business Management	48	3
ELE 803 Work Experience	256	3
OR	or	or
ELE 804 Work Experience	336	4

Diesel Mechanics

This program is designed to prepare the student for entry level employment in the Diesel Mechanics industry. The student will develop the skills and knowledge necessary for the maintenance, repair and rebuilding of various diesel engines and diesel powered equipment.

Some diesel mechanics courses are completely individualized. This allows the students to progress at their own pace in order to fully comprehend theory and develop the necessary skills. The individualized, self-paced instruction also allows the student to take a portion of a course (module) without taking the complete course if some specific knowledge or skill is desired. Credit for prior experience or training may be given by placement testing arranged through the instructor. Students may elect to receive a certificate or may apply the certificate courses required in this program toward an Associate in Applied Arts and Sciences Degree.

CERTIFICATE PROGRAM — DIESEL MECHANICS

Completion of the courses listed below qualifies a student for a certificate in Diesel Mechanics. The courses may be taken in any order desired after consultation with the instructor.

	Contact Hours	Credit Hours
Fall Semester I		
*DME 101 Caterpillar Diesel Engine	120	4
*DME 102 Cummins Diesel Engines	120	4
*DME 103 Detroit Diesel — Diesel Engines	*120	*4
*Any two of the above courses		
MTH 195 Technical Mathematics	48	3
	288	11
Spring Semester I		
DME 121 Standard Transmissions	90	3
DME 122 Heavy Duty Clutches and Torque Converters	60	2
DME 123 Air Brake Systems	60	2
DME 124 Differentials and Drive Lines	60	2
	270	9
Fall Semester II		
DME 141 Caterpillar Engine Tune-up and Fuel Systems	60	2
DME 142 Cummins Engine Tune-up and Fuel Systems	60	2
DME 143 Detroit Diesel — Engine Tune-up and Fuel Systems	60	2
DME 144 Diesel Engine Air Induction, Cooling and Lubrication Systems	30	1
DME 145 Electrical Theory an Basic Automotive Circuitry	30	1
DME 146 Starting, Charging, Lighting, and Accessory Circuitry	30	1
DME 703 Work Experience	256	3
	526	12
Spring Semester II		
DME 137 Oxygen/Acetylene and Arc Welding	90	3
DME 125 Automatic Transmissions (Diesel Engine — 101, 102, and 103 not completed previously must now be completed)	60 120	2 4
	270	9
Minimum Hours required for the Diesel Certificate:	1354	41

ASSOCIATE DEGREE PROGRAM DIESEL MECHANICS

Courses required for an Associate in Applied Arts and Sciences Degree with a major in Diesel Mechanics are listed below. The courses may be taken in any order providing the prerequisites have been met.

Fall Semester I	**Contact Hours**	**Credit Hours**
*DME 101 Caterpillar Diesel Engine	120	4
*DME 102 Cummins Diesel Engines	120	4
*DME 103 Detroit Diesel — Diesel Engines	*120	*4
*Any two of the above courses		
MTH 195 Technical Mathematics	48	3
BPR 177, or BUS 105, or BUS 131, or COM 132	48	3
	336	14
Spring Semester I		
DME 121 Standard Transmissions	90	3
DME 122 Heavy Duty Clutches and Torque Converters	60	2
DME 123 Air Brake Systems	60	2
DME 124 Differentials and Drive Lines	60	2
COM 131 Applied Composition and Speech	48	3
*Elective	48	3
	366	15
Fall Semester II		
DME 141 Caterpillar Engine Tune-up and Fuel Systems	60	2
DME 142 Cummins Engine Tune-up and Fuel Systems	60	2
DME 143 Detroit Diesel — Engine Tune-up and Fuel Systems	60	2
DME 144 Diesel Engine Air Induction, Cooling, and Lubrication Systems	30	1
DME 145 Electrical Theory and Basic Automotive Circuitry	30	1
DME 146 Starting, Charging, Lighting, and Accessory Circuitry	30	1
DME 703 Work Experience	256	3
PHY 131 Applied Physics	64	4
	590	16
Spring Semester II		
DME 137 Oxygen/Acetylene and Arc Welding	90	3
DME 125 Automatic Transmissions (Diesel Engine — 101, 102, and 103 not completed previously must now be completed)	60 120	2 4
SS 131 American Civilization	48	3
*Elective	48	3
Minimum Hours Required for Associate Degree	366 1658	15 60

Electives shall be selected from the following list of courses:

COM 132 Applied Composition and Speech	48	3
PSY 131 Human Relations	48	3
BPR 177 Blueprint Reading	64	2
BUS 105 Introduction to Business	48	3
BUS 131 Bookkeeping I	48	3
BUS 136 Principles of Management	48	3
BUS 153 Small Business Management	48	3
DME 704 Work Experience	336	4

Distribution Technology

The Distribution Technology program is designed to prepare students for entry or advancement in the career field of warehouse distribution. This program focuses on the basic business techniques and understanding of the principles and techniques relating to distribution, warehousing, pricing, merchandising, operations and management.

Successful completion of this program leads to the Associate of Applied Arts and Sciences Degree.

ASSOCIATE DEGREE PROGRAM — DISTRIBUTION TECHNOLOGY

Fall Semester I	**Lec Hrs**	**Lab Hrs**	**Cr Hrs**
DT 130 Introduction to Distribution	3	0	3
BUS 105 Introduction to Business	3	0	3
MTH 130 Business Mathematics	3	0	3
BUS 136 Principles of Management	3	0	3
DT 131 Principles and Practices of Wholesale Marketing I	3	0	3
			15
Spring Semester I			
DT 132 Principles and Practices of Wholesale Marketing II	3	0	3
ECO 201 Principles of Economics I	3	0	3
BUS 234 Business Law	3	0	3
COM 131 Applied Composition & Speech	3	0	3
Elective (Select from Recommended Electives)*	3	0	3
			15
Fall Semester II			
DT 231 Purchasing, Pricing, & Inventory Management	3	0	3
BUS 201 Principles of Accounting I	3	0	3
BUS 237 Organizational Behavior	3	0	3
BUS 231 Business Correspondence	3	0	3
Elective (Select from Recommended Electives)*	3	0	3
			15
Spring Semester II			
DT 230 Materials Handling & Physical Distribution	3	0	3
DT 133 Transportation & Traffic Management	3	0	3
CS 175 Introduction to Computer Science	3	0	3
Elective (Select from Recommended Electives)*	6	0	6
			15
Minimum Hours Required for Associate Degree			60
***Recommended Electives**			
BUS 202 Principles of Accounting II	3	0	3
ECO 202 Principles of Economics II	3	0	3
BUS 206 Principles of Marketing	3	0	3
BUS 230 Salesmanship	3	0	3
BUS 209 Principles of Insurance	3	0	3
BUS 160 Office Machines	3	0	3
BUS 172 Beginning Typing	3	0	3
BUS 174 Intermediate Typing	2	0	2
DT 713, 714, 803, 804, 813, 814 Cooperative Work Experience	3-4	15-20	6-8

Mid-Management

This program in business management is designed to develop the fundamental skills, knowledge, attitudes and experiences which enable men and women to function in decision-making positions as supervisors or junior executives.

The Mid-Management program is a cooperative plan with members of the business community whereby the student attends college classes in business and related courses and concurrently works at a regular, paid, parttime or fulltime job in a sponsoring business firm. Successful completion of the program leads to the Associate Degree.

ASSOCIATE DEGREE PROGRAM — MID-MANAGEMENT

	Lec Hrs	Lab Hrs	Cr Hrs
Fall Semester I			
BUS 136 Principles of Management	3	0	3
***BUS 150 Management Training	0	20	4
***BUS 154 Management Seminar: The Role of Supervision	2	0	2
COM 131 Applied Composition & Speech or ENG 101 Composition & Expository Reading	3	0	3
HUM 101 Introduction to the Humanities	3	0	3
	11	20	15
Spring Semester I			
BUS 105 Introduction to Business	3	0	3
BUS 151 Management Training	0	20	4
BUS 155 Management Seminar: Personnel Management	2	0	2
COM 132 Applied Composition & Speech or ENG 102 Composition & Literature	3	0	3
Elective*	3	0	3
	11	20	15
Fall Semester II			
BUS 201 Principles of Accounting or BUS 131 Bookkeeping	3	0	3
BUS 250 Management Seminar: Management Training	0	20	4
BUS 254 Organizational Development	2	0	2
SS 131 American Civilization or HST 101 History of the United States	3	0	3
Elective*	3	0	3
	11	20	15
Spring Semester II			
BUS 251 Management Training	0	20	4
BUS 255 Management Seminar: Business Strategy, the Decision Process & Problem Solving	2	0	2
ECO 201 Principles of Economics I	3	0	3
Elective*	3	0	3
Elective**	3	0	3
	11	20	15
Minimum Hours Required for an Associate Degree			60

*Suggested Electives: BUS 137, BUS 153, BUS 160, BUS 204, BUS 206, BUS 231, BUS 233, BUS 234, BUS 237, CS 175, BIO 116, BIO 115, MTH 130, PSY 105, PSY 131, SPE 105.

**This elective must be chosen from ECO 202 or from courses in the social and behavioral sciences.

***Preliminary interview by mid-management coordinator required.

Mid-Management Small Business Management Option

The Small Business Management program is designed to assist owners and managers of small business in developing the skills and techniques necessary for operation. The program is also designed for students who plan to become owners or operators of small businesses.

Successful completion of the program leads to the Associate in Applied Arts and Sciences Degree.

ASSOCIATE DEGREE PROGRAM

Fall Semester I	**Lec Hrs**	**Lab Hrs**	**Cr Hrs**
BUS 153 Small Business Management or BUS 105 Introduction to Business	3	0	3
BUS 150 Management Training	0	20	4
*BUS 154 Management Seminar: Role of Supervision	2	0	2
COM 131 Applied Composition & Speech or ENG 101 Composition & Expository Reading	3	0	3
HUM 101 Introduction to Humanities	3	0	3
	11	20	15
Spring Semester I			
BUS 136 Principles of Management	3	0	3
BUS 151 Management Training	0	20	4
BUS 155 Management Seminar: Personnel Management	2	0	2
COM 132 Applied Composition & Speech or ENG 202 Composition & Literature	3	0	3
Elective	3	0	3
	11	20	15
Fall Semester II			
BUS 157 Small Business Bookkeeping & Accounting Practices or BUS 201 Principles of Accounting or BUS 131 Bookkeeping	3	0	3
BUS 250 Management Training	0	20	4
BUS 254 Management Seminar: Organizational Development	2	0	2
SS 131 American Civilization or HST 101 History of the United States	3	0	3
BUS 210 Small Business Organization, Acquisition & Finance	3	0	3
	11	20	15
Spring Semester II			
BUS 251 Management Training	0	20	4
BUS 255 Management Seminar: Business Strategy, the Decision Process & Problem Solving	2	0	2
ECO 201 Principles of Economics	3	0	3
BUS 211 Small Business Operations	3	0	3
Elective	3	0	3
	11	20	15
Minimum Hours Required for an Associate Degree			60

*Preliminary interview by Mid-Management Coordinator required.

Real Estate

The program in real estate is designed to develop the fundamental skills, attitudes and experiences which enable the student to function in decision-making positions in the real estate profession. Successful completion of the program leads to the Associate in Applied Arts and Sciences degree.

ASSOCIATE DEGREE PROGRAM

Fall Semester I	**Lec Hrs**	**Lab Hrs**	**Cr Hrs**
COM 131 Applied Composition & Speech or ENG 101 Composition & Expository Reading	3	0	3
BUS 105 Introduction to Business	3	0	3
MTH 130 Business Math	3	0	3
RE 130 Real Estate Principle	3	0	3
RE 131 Real Estate Finance	3	0	3
			15
Spring Semester I			
COM 132 Applied Composition & Speech or ENG 102 Composition & Literature	3	0	3
RE 133 Real Estate Marketing	3	0	3
RE 135 Real Estate Appraisal	3	0	3
RE 136 Real Estate Law or BUS 234 Business Law	3	0	3
Elective (Psychology, Sociology or Human Development)	3	0	3
			15
Fall Semester II			
ECO 201 Principles of Economics	3	0	3
RE 230 Real Estate Office Management	3	0	3
**RE 250 Real Estate Internship I	0	20	4
RE 254 Real Estate Seminar I	2	0	2
Elective*			3
			15
Spring Semester II			
GVT 201 American Government	3	0	3
BUS 201 Principles of Accounting	3	0	3
**RE 251 Real Estate Internship II	0	20	4
RE 255 Real Estate Seminar II	2	0	2
Elective*			3
			15
Minimum Hours Required for an Associate Degree			60

***Recommended Electives:**

RE 233 Commercial / Investment Real Estate
RE 235 Property Management
BUS 202 Principles of Accounting II
DFT 185 Architectural Drafting
ECO 202 Principles of Economics
SPE 105 Fundamentals of Public Speaking

***Preliminary interview by Real Estate Coordinator required*

Office Occupations

There are three options in the area of Office Occupations including: General Office Careers, Secretarial Careers and Legal Secretary. The options in General Office Careers and Secretarial Careers offer Certificate and Associate in Applied Arts and Sciences degrees. The Legal Secretarial program is an Associate in Applied Arts and Sciences Degree program only.

General Office Careers Option

CERTIFICATE PROGRAM — GENERAL OFFICE

A program designed for rapid entrance into the general office field.

Courses required for a Certificate of Completion are listed below. The courses may be taken in any order provided that prerequisites have been met. Students should check the course descriptions in the catalog to determine which courses have prerequisites.

Fall Semester I	Lec Hrs	Lab Hrs	Cr Hrs
BUS 105 Introduction to Business	3	0	3
MTH 130 Business Mathematics	3	0	3
BUS 160 Office Machines	3	0	3
BUS 172 Beginning Typing[1]	2	3	3
or BUS 174 Intermediate Typing	(1)	(2)	(2)
COM 131 Applied Composition and Speech	3	0	3
or ENG 101 Composition & Expository Reading			
			14/15
Spring Semester I			
BUS 162 Office Procedures	3	0	3
BUS 165 Introduction to Word Processing	3	0	3
BUS 174 Intermediate Typing[1]	1	2	2
or BUS 273 Advanced Typing			
BUS 231 Business Correspondence	3	0	3
COM 132 Applied Composition & Speech	3	0	3
or ENG 102 Composition & Literature			
BUS 131 Bookkeeping I	3	0	3
or BUS 201 Principles of Accounting I			
			17

[1]Placed according to skill

ASSOCIATE DEGREE PROGRAM — GENERAL OFFICE

Associate in Applied Arts and Sciences Degree — A program designed to enable advancement to responsible office positions.

This program is designed to train the student in office skills. Students completing the program will be qualified for positions as a clerk-typist, file clerk, receptionist, and word processing operator. This program does not include shorthand. There is a general orientation to the business world plus intensive training in typewriting, office machines, bookkeeping, and word processing. In the degree program, management principles and human relations skills are stressed which could lead to employment as a word processing supervisor or office manager.

To earn an Associate in Applied Arts and Sciences Degree, you must complete the courses listed in the Fall I and Spring I Semesters of the General Office Careers Certificate Program, plus the following:

Fall Semester II	Lec Hrs	Lab Hrs	Cr Hrs
BUS 132 Bookkeeping II	3	0	3
or BUS 202 Principles of Accounting II			
BUS 273 Advanced Typing	1	2	2
or Elective*			
BUS 265 Word Processing Practices & Procedures	3	0	3
BUS 234 Business Law	3	0	3
BUS 237 Organizational Behavior	3	0	3
			14

*Elective only if Advanced Typing has been taken

Spring Semester II			
BUS 274 Legal Secretarial Procedures	3	0	3
BUS 256 Office Management	3	0	3
HUM 101 Introduction to the Humanities	3	0	3
PSY 131 Human Relations	3	0	3
Elective	3	0	3
Elective	3	0	3
			18

Suggested Electives:
BUS 136, BUS 803, BUS 813, CS 175, ECO 201, PSY 105, SOC 101.

Secretarial Careers Options

CERTIFICATE PROGRAM — SECRETARIAL CAREERS

Courses required for a Certificate of Completion are listed below. The courses may be taken in any order provided that prerequisites have been met. The student should check the course descriptions in the catalog to determine which courses have prerequisites. The program is designed for rapid entrance into the secretarial field.

Fall Semester I	Lec Hrs	Lab Hrs	Cr Hrs
BUS 159 Beginning Shorthand[1]	3	2	4
or BUS 166 Intermediate Shorthand			
BUS 172 Beginning Typing[1]	2	3	3
or BUS 174 Intermediate Typing	(1)	(2)	(2)
BUS 160 Office Machines	3	0	3
BUS 131 Bookkeeping I	3	0	3
or BUS 201 Principles of Accounting I			
BUS 105 Introduction to Business	3	0	3
COM 131 Applied Composition & Speech	3	0	3
or ENG 101 Composition & Expository Reading	3	0	3
			18/19

Spring Semester I			
BUS 166 Intermediate Shorthand[1]	3	2	4
or BUS 266 Advanced Shorthand			
BUS 174 Intermediate Typing[1]	1	2	2
or BUS 273 Advanced Typing			
BUS 162 Office Procedures	3	0	3
BUS 231 Business Correspondence	3	0	3
BUS 165 Introduction to Word Processing	3	0	3
MTH 130 Business Mathematics	3	0	3
			18

[1]Placed according to skill

ASSOCIATE DEGREE PROGRAM — SECRETARIAL CAREERS

Associate in Applied Arts and Sciences Degree — A program designed for advancement to the executive secretarial level.

The purpose of this program is to prepare the student to become an alert and responsive secretary capable of performing the tasks required in the modern business office. Intensive training is provided in the basic secretarial skills such as shorthand, typewriting, and office machines. Emphasis is also placed on English, math, and human relations skills. The student may elect to receive a certificate only, or may apply the courses required in this major toward an Associate in Applied Arts and Sciences Degree.

To earn an Associate in Applied Arts and Sciences Degree, you must complete the courses listed in the Fall I and Spring I semesters of the Secretarial Careers Certificate Program, plus the following:

Fall Semester II	**Lec Hrs**	**Lab Hrs**	**Cr Hrs**
BUS 266 Advanced Shorthand or Elective*	3	2	4
BUS 265 Word Processing Practices & Procedures	3	0	3
BUS 273 Advanced Typing or Elective*	1	2	2
CS 175 Introduction to Computer Sciences	3	0	3
BUS 803 or BUS 804 Work Experience or Elective	3-4		3-4
			15/16

*Electives **only** if Advanced Shorthand and Advanced Typing have been taken*

Spring Semester II			
BUS 275 Secretarial Procedures	3	0	3
BUS 813 or BUS 814 Work Experience or Elective	3-4		3-4
COM 132 Applied Composition & Speech or ENG 102 Composition & Literature	3	0	3
HUM 101 Introduction to the Humanities	3	0	3
PSY 131 Human Relations	3	0	3
			15/16

Suggested electives:
BUS 136, BUS 143, BUS 234, BUS 237, PSY 105, SPE 105, BUS 256.

BACHELOR'S DEGREE PROGRAM

Students who wish to continue their education at a four-year college, should consult a counselor to plan a program of studies to assure that this goal is reached.

Credit Given for CPS Rating

Credit toward the Associate in Applied Arts and Sciences Degree may be granted upon successful completion of all parts of the Certified Professional Secretary (CPS) Exam. The courses for which credit may be granted are:

BUS 131 Bookkeeping I	3
BUS 159 Beginning Shorthand	4
BUS 162 Office Procedures	3
BUS 166 Intermediate Shorthand	4
BUS 172 Beginning Typewriting	3
BUS 174 Intermediate Typewriting	2
BUS 231 Business Correspondence	3
BUS 234 Business Law	3
BUS 275 Secretarial Procedures	3
PSY 131 Human Relations	3
	31

In order to receive credit, the applicant must:

1. *Request direct notification be given to the Registrar of the College by the Institute for Certifying Secretaries that the applicant has passed all sections of the exam within the last 10 years;*
2. *Earned 12 hours credit for courses at North Lake before the advanced standing credit is posted on the applicant's record.*

Legal Secretary Option

ASSOCIATE DEGREE PROGRAM

A program designed to prepare students for professional entry into the legal secretarial field.

Courses required for an Associate in Applied Arts & Sciences Degree in this area include completion of all the following courses.

Fall Semester I	**Lec Hrs**	**Lab Hrs**	**Cr Hrs**
BUS 159 Beginning Shorthand[1]	3	2	4
or BUS 166 Intermediate Shorthand			
BUS 172 Beginning Typing[1]	2	3	3
or BUS 174 Intermediate Typing	(1)	(2)	(2)
BUS 160 Office Machines	3	0	3
BUS 131 Bookkeeping I	3	0	3
or BUS 201 Principles of Accounting I			
BUS 105 Introduction to Business	3	0	3
COM 131 Applied Composition & Speech	3	0	3
or ENG 101 Composition & Expository Reading			
			18/19
Spring Semester I			
BUS 166 Intermediate Shorthand[1]	3	2	4
or BUS 266 Advanced Shorthand			
BUS 174 Intermediate Typing[1]	1	2	2
or BUS 273 Advanced Typing			
BUS 162 Office Procedures	3	0	3
BUS 231 Business Correspondence	3	0	3
BUS 165 Introduction to Word Processing	3	0	3
MTH 130 Business Mathematics	3	0	3
			18

[1]Placed according to skill

Fall Semester II			
BUS 266 Advanced Shorthand	3	2	4
or Elective*			
BUS 265 Word Processing Practices & Procedures	3	0	3
BUS 167 Legal Terminology & Transcription	3	0	3
BUS 275 Secretarial Procedures	3	0	3
COM 132 Applied Composition & Speech	3	0	3
or ENG 102 Composition & Literature			
BUS 273 Advanced Typing	1	2	2
or Elective*			
			18/19

*Electives only if Advanced Shorthand and Advanced Typing have been taken

Spring Semester II			
BUS 274 Legal Secretarial Procedures	3	0	3
CS 175 Introduction to Computer Sciences	3	0	3
HUM 101 Introduction to the Humanities	3	0	3
PSY 131 Human Relations	3	0	3
			12

Suggested Electives
BUS 803, BUS 804, BUS 813, BUS 814, BUS 143, BUS 234, BUS 237, PSY 105, SPE 105, and BUS 256.

Optical Technology

The Optical Technology program is designed to prepare students for entry level employment in the optical manufacturing or optical dispensing fields:

Graduates should be able to operate machines, read optical specifications, perform quality control checks, and be able to communicate with customers.

Graduates may specialize in either optical manufacturing or optical dispensing.

Students may elect to receive a certificate or may apply the certificate courses required in this program towards an Associate of Applied Arts and Sciences Degree.

CERTIFICATE PROGRAM — OPTICAL TECHNOLOGY

Fall Semester I	**Lec Hrs**	**Lab Hrs**	**Cr Hrs**
OPT 101 Ophthalmic Materials	3	0	3
OPT 102 Ophthalmic Grinding and Polishing	2	2	3
MTH 195 Technical Mathematics	3	0	3
OPT 103 Optical Lens Design and Measurements	3	0	3
OPT 104 Optical Lens and Frame Selection	2	2	3
	13	4	15
Spring Semester II			
PHY 131 Applied Physics	3	3	4
OPT 205 Anatomy and Physiology of the Eye	3	0	3
OPT 206 Introduction to Contact Lenses	3	0	3
OPT 207 Bifocals and Trifocals Lenses	2	2	3
	11	5	13
Summer Semesters I & II (12 Weeks)			
OPT 703 or 713 Cooperative Training in a Lab	1	20	3
	1	20	3
Fall Semester III			
OPT 208 Ophthalmic Laboratory Equipment	2	2	3
OPT 209 Dispensing Ethics	3	0	3
OPT 211 Optical Principles	3	0	3
OPT 803 or 813 Cooperative Training	1	15	3
	9	17	12

TOTAL CREDITS REQUIRED FOR CERTIFICATE 43

ASSOCIATE DEGREE PROGRAM — OPTICAL TECHNOLOGY

Fall Semester I	Lec Hrs	Lab Hrs	Cr Hrs
OPT 101 Ophthalmic Materials	3	0	3
OPT 102 Ophthalmic Grinding and Polishing	2	2	3
ENG 101 Composition and Expository Reading	3	0	3
OR			
COM 131 Applied Communications and Speech			
MTH 195 Technical Mathematics	3	0	3
PSY 131 Human Relations	3	0	3
	14	2	15
Spring Semester I			
OPT 103 Optical Lens Design and Measurements	3	0	3
OPT 104 Optical Lens and Frame Selection	2	2	3
GVT 201 American Government	3	0	3
OR			
HST 101 History of the United States			
PHY 131 Applied Physics	3	3	4
BUS 105 Introduction to Business	3	0	3
	14	5	16
Summer Semesters I & II (12 Weeks)			
OPT 703 or 713 Cooperative Training in a Lab	1	20	3
Fall Semester II			
OPT 205 Anatomy and Physiology of the Eye	3	0	3
OPT 206 Introduction to Contact Lenses	3	0	3
OPT 207 Bifocals and Trifocals Lenses	2	2	3
OPT 208 Ophthalmic Laboratory Equipment	2	2	3
OPT 803 Cooperative Training (Lab or Dispensing)	1	15	3
	11	19	15
Spring Semester II			

Lab Majors	Lec Hrs	Lab Hrs	Cr Hrs
OPT 209 Dispensing Ethics	3	0	3
OPT 211 Opt. Principles	3	0	3
Elective	3	0	3
OPT 813 Cooperative Training	1	15	3
	10	15	12

TOTAL CREDITS REQUIRED 61

Dispensing Majors	Lec Hrs	Lab Hrs	Cr Hrs
OPT 210 Ophthalmic Fitting	3	0	3
OPT 212 Measurements	2	2	3
OPT 213 Occup. Eyewear	2	2	3
OPT 813 Cooperative Training	1	15	3
	8	19	12

TOTAL CREDITS REQUIRED 61

Pilot Ground School

The Pilot Ground School program is designed to provide the student with the ground school training satisfying the requirements of the Federal Aviation Administration for certification as a private and/or commercial pilot with an instrument rating. All ground school instruction conforms to Federal Aviation Regulations and is thus subject to change to conform to such regulations.

Students who become pilots may look forward to employment in such work as charter service, agricultural crop spraying, private business piloting, pipeline piloting, and flight instructing. In addition to the use of pilot training as primary employment, it may also be used by salesmen, business executives and professional personnel in the performance of their occupations.

Certificates of Completion are granted for the successful completion of each course listed below and entitles the student to take the FAA written examination (usually administered by the FAA on the NLC campus). The FAA written exam, if passed, is good for twenty-four months, allowing the student ample time to complete the required flight training and to pass a check ride to receive the appropriate pilot certificate or rating. The Associate in Applied Arts and Sciences Degree in Aviation Technology is offered at Mountain View College for students desiring to continue their training and/or to work toward a two-year degree in piloting.

Students as young as sixteen may enroll in the private ground school course; such students will need high school permission (if a senior, a letter from the Principal to the North Lake College Admissions Office; if below senior grade, a letter from the school Superintendent to the North Lake Vice-President of Student Services).

Pilot Ground School Courses	Lec Hrs	Lab Hrs	Cr Hrs
AVT 121 Private Ground School	3	0	3
AVT 123 Commercial Ground School	3	0	3
AVT 224 Instrument Ground School	3	0	9
			9

Solar Energy Technology

The Solar Energy Technology program prepares students for entry-level employment in the solar energy industry. Graduates of the program should be proficient in installation of new and retrofitted hot water and space heating systems, and repair and maintenance of these systems. Both air and hydronic systems will be covered.

Program graduates may choose an alternate career as a sales representative, a research assistant, or some other solar energy related position.

Enrollment in the program requires no previous experience or course work in airconditioning and refrigeration. However, previous experience in this field may enable the student to test-out or substitute courses with instructor approval.

ASSOCIATE DEGREE PROGRAM

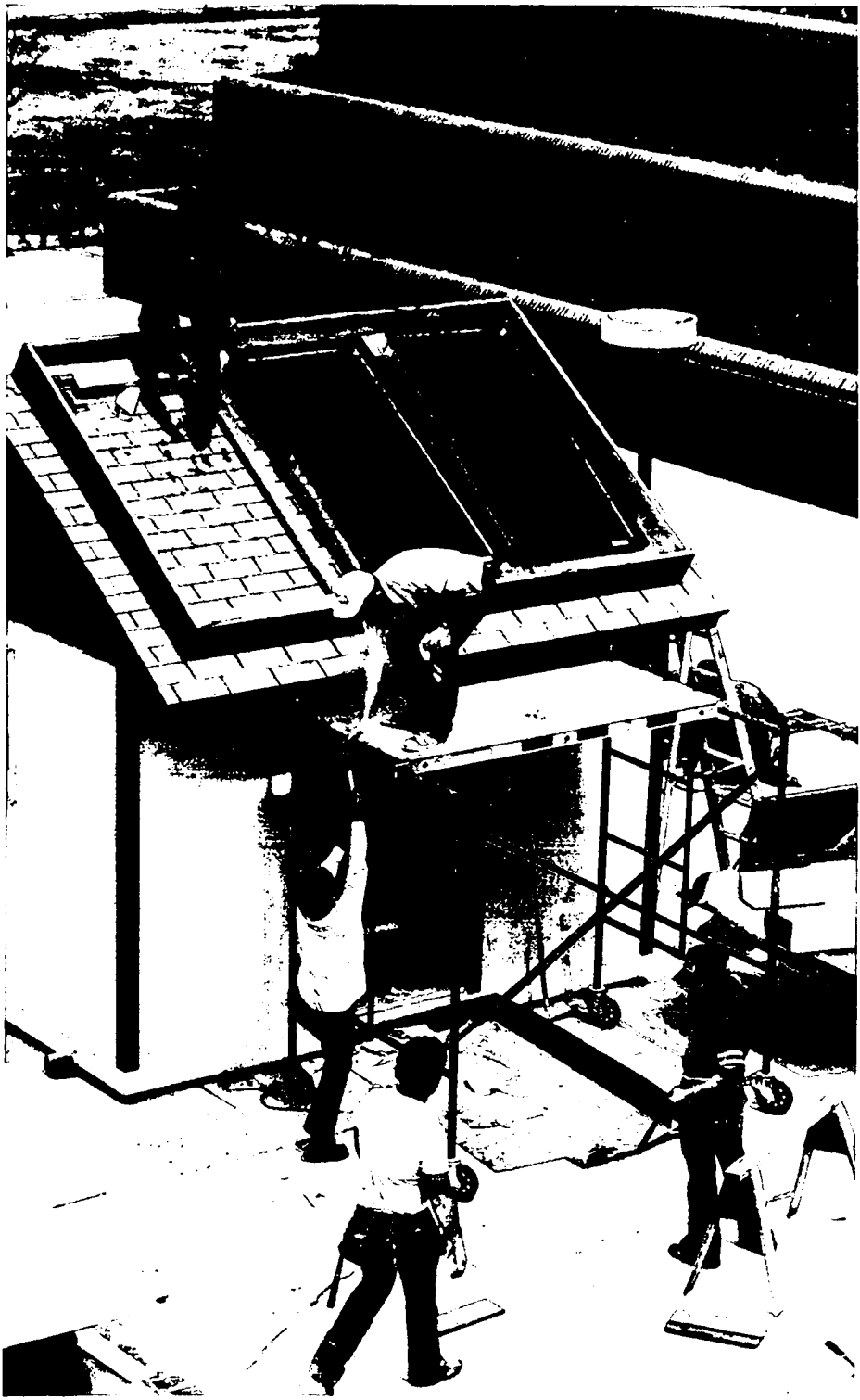
Fall Semester I	**Lec Hrs**	**Lab Hrs**	**Cr Hrs**
MTH 195 Technical Mathematics	3	0	3
ST 101 Energy Science I	3	3	4
ST 102 Introduction to Solar Energy	2	0	2
ST 103 Materials and Handling	1	2	2
AC 171 Pipefitting Procedures	0	2	1
DFT 182 Technical Drafting	1	3	2
	10	10	14
Spring Semester I			
MTH 196 Technical Mathematics	3	0	3
ST 104 Energy Science II	3	3	4
ST 105 Collectors & Energy Storage	2	4	4
*AC 163 Refrigerants	0	2	1
AC 152 Simple Schematics & Circuits	0	2	1
AC 153 Circuit Components	0	2	1
ENG 101 Composition & Expository Reading	3	0	3
OR			
COM 131 Applied Composition and Speech			
	11	13	17

*Should be taken in sequence as follows:
AC 163, 152, 153

Fall Semester II			
AC 185 Residential Heating Systems	0	6	3
AC 155 Advance Electrical Circuits	0	6	3
ST 201 Sizing Design and Retrofit	3	3	4
MTH 107 Fundamentals of Computing	3	0	3
AC 241 Air Distribution — Cooling	0	2	1
	6	17	14
Spring Semester II			
BUS 105 Introduction to Business	3	0	3
**OR Approved Electives			
ST 202 Operational Diagnosis	2	3	3
ST 203 Codes, Legalities, Economics, and Consumerism	2	0	2
PSY 131 Human Relations	3	0	3
**OR Approved Electives			
AC 180 Residential Cooling Systems	0	6	3
ST 204 Technical Survey of Energy Sources	3	0	3
	13	9	17
Minimum Hours Required for Associate Degree			62

*Approved Electives (Approval by the Instructor and Division Chair)

ST 803, 813 — Cooperative Education	1	15	3
ST 210 Non-Residential Applications and Future Technology	2	3	3



FACULTY AND ADMINISTRATION

Anders, Sue Stallings ..... Director
University of Texas Public Information
at Austin, B.A.;
University of Texas at
Arlington, Study

Anderson, Ida ..... Counselor
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University, B.S., M.S.;
University of Northern
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Anderson, B. T. ..... Chairperson
Southwest Texas Science/Technology
State Univ., B.S., M.S.

Ates, Clarence "Chip" ..... Counselor
Oakwood College, B.S.;
Oklahoma State University, M.S.

Bacon, Gary..... Chairperson
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B.S., Southern Methodist Management
Univ., M.B.A., Univ. of
Arizona Naval War College,
Study

Baen, John ..... Business/
Texas A & M Univ., Management
B.S., M.S.; Texas A & M
Univ., Study

Blackman, Lona ..... Physical Education
University of Texas at
Austin, B.S.; Southern
Methodist Univ., M.S.

Blankenship, Patsy..... Business/
North Texas State Management
University, B.B.A.,
M.B.E.

Blevins, Larry G. ..... Business/
Cooke County Management
College, A.A.;
Wayland Baptist College, B.S.O.E.

Bolin, Bill ..... Air Conditioning/
East Texas State Refrigeration
University, B.S., Voc. Ed

Bolin, Rick ..... Associate Dean
Universty of Wisconsin- Continuing
Madison, B.B.A., M.S. Education

Bounds, Glen I. ..... Vice President
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University of Louisiana, B.S.;
East Texas State University, M.S.;
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Study

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Central State Student Services
University; Ohio, B.S.;
Marshall University of
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Chapman, Paul..... Director
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Study

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Elms, Tommy N., Jr..... Diesel Mechanics

Evans, Nancy..... Director, Student
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Wilson, Roger ..... Carpentry
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Workman, Michael E. ..... Business
West Texas State University, B.S.; Texas A&M University, M.S.

ADVISORY COMMITTEES

Programs in the occupational fields are constantly monitored by experts from business and industry. These professionals are members of advisory committees and are selected by the college. Advisory Committee members provide vital information concerning manpower, skill requirements and future trends in their areas of expertise.

Advisory committee members' on-line experience is extremely valuable to the college as it designs and develops programs to prepare students with current and relevant training in a chosen career field.

This cooperation between industry and education is directly beneficial to students in career programs at North Lake and is an important element in the level of quality of the college's career offerings.

Accounting Advisory Committee Members

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Internal Revenue Service

Mr. Al Bazis
Associates Corporation of North America

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Certified Public Accountant

Mr. Bruce L. Bland
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International Brotherhood of Electrical Workers

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Texas Stadium

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Mary Kay Cosmetics

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Mr. Robert Davis
Otis Engineering Company

Mr. Leo Jackson
Texas Commerce Bank — Irving

Mr. R. C. McLaughlin
Dallas Wholesale Builder Supply

Mr. Hoie C. Meinzer
Motorola Communications & Electronics

Ms. Carol Shlipak

Mr. Doyle Stewart

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International Business Machines

Mrs. Dorothy Carden
National Chemsearch, Inc.

Ms. Orie Craig
American Bank

Mr. Lanny S. Day
Medicare

Mr. Leonard Ellis
Associates Corporation of North America

Ms. Patricia J. Flynt
Dallas/Ft. Worth Airport

Ms. Elaine Free
Irving Independent School District

Mr. Felix R. Garza
Civil Service Commission

Ms. Beverly Gray
Allstate Insurance Company

Ms. Sandra Sparkman
Texas Employment Commission

Mrs. June Woodruff
Power, Ashley, and Kinkeade

Mrs. Melba Woodson
Nimitz High School

Optical Technology Advisory Committee Members

Mr. Ed Hill
Hill Optical

Mr. Leon Johnson
Bausch & Lomb, Inc.

Mr. Lloyd Laird
American Optical

Mr. Bob Long
Omega Optical Company

Mr. Buddy Lucas
International Optics

Mr. Benton Markey
Royal Optics

Mr. Don Phillips
International Optics

Mr. Sylvan Ray
Associated Optical Lab

Mr. Bill Sullivan
International Optics

Real Estate Advisory Committee Members

Mr. Bud Archer
Blue Ribbon Homes

Mr. Claude Chambers
Blue Ribbon Homes

Mr. Frank Foster
1st Guaranty Realty

Mr. Jim Leftwich
Dallas Title Company

Mr. Mike Leonard
Red Carpet Realtors

Mr. Billy Martin
Martin Real Estate

Mr. Tommy Nunn
FHA Department — HUD

Ms. Mary Okerberg
Century 21 — ABI

Mr. Earl Page
Earl Page Realtors, Inc.

Mr. Bill Proctor
Proctor Realty Company

Ms. Mildred Shirey
Avery Real Estate

Mr. Jack Spurlock
Century 21

Ms. Margie Sweden
Red Carpet

Small Business Management Advisory Committee Members

Mr. Henry Fisher
Small Business Administration

Mr. David Halper
University of Dallas

Mr. W. R. "Bill" Henry
City of Grand Prairie

Mr. John Jackson
Malouf, Lynch & Jackson

Mr.Dave Rettig
Rettig-Underwood Office Supplies

Mr. Avie Schonwald
Candy, Spector & Schonwald, CPA

Mr. John Tatum
Town North Bank

Mr. Jerry White
Southern Methodist University

Solar Energy Technology Advisory Committee Members

Mr. Kenneth J. Anderson
Travis-Braun & Associates

Mr. Bill Burgeser
City of Dallas

Mr. Bill Davis
Travis-Braun & Associates

Mr. Joe Guthrie
Architect

Mr. Gus Hutchinson
Solar Kinetics, Inc.

Mr. Sid Parker
Lennox Industries, Inc.

Mr. George Walters
Solar Enterprises, Inc.

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